SONY

DIGITAL VIDEOCASSETTE PLAYER

DNW-A30/A30P
DNW-30/30P

BETACAM SX

MAINTENANCE MANUAL Part 1

1st Edition

Serial No. 10001 and Higher (DNW-A30)
Serial No. 10001 and Higher (DNW-A30P)
Serial No. 10001 and Higher (DNW-30)
Serial No. 10001 and Higher (DNW-30P)

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

Attention-when the product is installed in Rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.

2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.

3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.

4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.

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Table of Contents

Manual Structure

Purpose of this manual 5
Contents 5
Related manuals 6

1. Installation

1-1. Installation Procedure 1-1
1-2. Supplied Accessories 1-1
1-3. Operating Conditions 1-2
1-4. Power Supply 1-2
1-4-1. Voltage and Power Requirements 1-2
1-4-2. Power Cord 1-2
1-5. Installation Space 1-3
1-6. Rack Mounting 1-4
1-7. Connecting Connectors and Cables 1-9
1-8. Signal Inputs and Outputs 1-10
1-9. Switch Settings on Connector Panel 1-11
1-10. Switch and Shorting Plug Setting on PC Boards 1-12
1-10-1. APR-12 Board 1-12
1-10-2. APR-13 Board 1-14
1-10-3. DM-89 Board 1-16
1-10-4. TBC-23 Board 1-17
1-10-5. SS-63 Board 1-18
1-11. Mode Switching of Search Dial 1-20
1-12. Setup Menu Items 1-21
1-13. Reference System 1-23
1-14. Switching between 525/625 Line Systems 1-23
1-15. Settings and Adjustment when Peripheral Equipment is Connected 1-24
1-15-1. VTR Constant Values Setting when Editor is Connected 1-24
1-15-2. System Phase Adjustment 1-24
1-15-3. Setup Menu Setting 1-25

2. Service Overview

2-1. Notes on Power Supply Block 2-1
2-1-1. Warning on Primary Circuit Block and Electric Shock 2-1
2-1-2. Note on Resetting the Circuit Breaker 2-1
2-2. Cleaning when the Heads are Clogged 2-1
2-3. Removal/Installation of Cabinet 2-2
2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation 2-2
2-3-2. Control Panels Removal/Installation 2-3
2-3-3. Connector Panel Assembly Removal/Installation 2-4
2-3-4. Power Supply Panel Assembly Removal/Installation 2-5
2-4. Plate MD Assembly Removal/Installation 2-5
2-5. Cassette Compartment Removal/Installation 2-6
2-6. Lower Control Panel Assembly Removal/Installation 2-7
2-7. Circuit Function 2-8
2-8. Location of Main Parts 2-10
2-8-1. Printed Circuit Boards and Power Supply Unit Location 2-10
2-8-2. Main Mechanical Parts Location 2-13
2-9. Function and Location of Sensors 2-14
2-10. System of Cassette 2-16
2-11. Information of LEDs on Circuit Boards 2-18
2-12. How to Take Out the Cassette when the Tape is Slacking 2-21
2-13. Pulling Out/Insertion of Plug-in Board 2-22
2-14. Fixtures and Adjustment Equipments List 2-23
2-14-1. Equipment for Adjustment 2-23
2-14-2. Fixtures 2-24
2-15. ISR
(Will be available as a supplement.)

3. Error Message

3-1. Error Message 3-1

4. Maintenance Mode

(Will be available as a supplement.)

5. Periodic Maintenance and Inspection

5-1. Periodic Maintenance 5-1
5-1-1. Index 5-1
5-1-2. Periodic Replacement and Check Item List 5-2
5-1-3. Hours Meter 5-3
5-2. Cleaning 5-4
5-2-1. Cleaning by Cleaning Tape 5-4
5-2-2. General Information for Cleaning by Cleaning Cloth 5-4
5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning 5-6
5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning 5-7
5-2-5. Stationary Heads Cleaning 5-8
5-2-6. Tape Running System and Tape Cleaner Cleaning 5-9
5-2-7. Fan Motors Cleaning 5-10
5-2-8. Cassette Compartment and Cassette Supports Cleaning 5-11

6. Replacement of Plug-in Boards

(Will be available as a supplement.)

7. Spare Parts

7-1. Notes on Repair Parts 7-1
7-2. Exploded Views 7-2
7-3. Plug-in Boards 7-4
7-4. Packing Materials and Supplied Accessories 7-5
7-5. Fixtures List 7-6

Appendix A Setting Check Sheet

Appendix B Block Diagrams

INDEX B-1
OVERALL (1/2) B-3
OVERALL (2/2) B-4

Manual Structure

Purpose of this manual

This manual is the Maintenance manual part1 of digital videocassette player DNW series. DNW series include the following models .

DNW-A30/A30P
DNW-30/30P

This manual is intended for use by trained system and service engineers, and provides the information that is required to install, maintenance information, and the information for service such as replacement of plug-in boards.

Note: The figure in this manual is the DNW-A30 unless otherwise specified.

Contents

This manual is organized by following sections.

Section 1 Installation

Explains the information that is required to install (environment, connection information, initial setting, etc.) .

Section 2 Service Overview

Explains fundamental area of the information that is required to service , (removal of cabinet and cassette compartment, the functions of printed circuit board, the locations of main part, fixture and measuring equipment information, notes, etc.) , the measures against trouble and ISR (Interactive Status Reporting).

Section 3 Error Message

Explains the error messages.

Section 4 Maintenance Mode

Explains each menu of the maintenance mode.

Section 5 Periodic Maintenance and Inspection

Explains the recommended periodic maintenance, and the cleaning procedure.

Section 6 Replacement of Plug-in Boards

Explains how to replace the plug-in board and how to adjust and check after replacement.

Section 7 Spare Parts

Describes the spare parts list and the exploded view for the service parts of this unit, and the packing materials and supplied accessories list.

Appendix A Setting Check Sheet

The sheet is used for checking the setup conditions such as switch, setup menu under the application.

Appendix B Block Diagrams

Describes the overall block diagrams

Related manuals

Besides this “Maintenance manual part 1”, the following manuals are available for digital videocassette player DNW series.

- **Operation Manual Part 1 (Supplied with the DNW.)**
  This manual is necessary for application and operation (and installation) of the DNW.

- **Maintenance Manual Part 2 (available on request)**
  This manual describes the information that premises the parts level service (adjustments, board layouts, schematic diagrams, detailed parts list, etc.) for this unit.
  If this manual is required, please contact to Sony’s service organization.

- **Protocol Manual of Remote (9-pin) Connector (available on request)**
  This manual explains the protocol for controlling the VTR via the RS-422A (9-pin serial remote) .
  If this manual is required, please contact to Sony’s service organization.

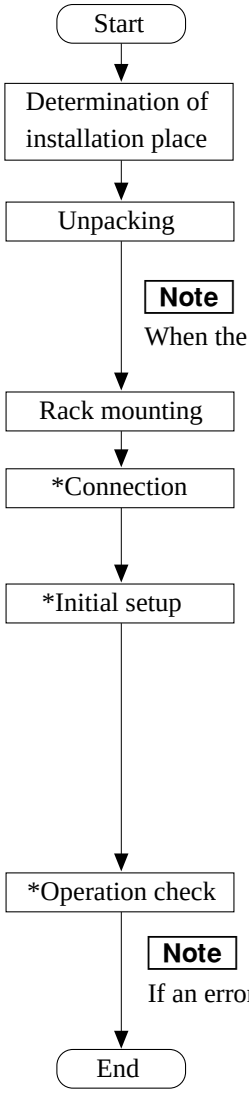
Section 1
Installation

1-1. Installation Procedure

Installation procedure of this unit is shown on the following flowchart.
Refer to each section about detail of each flow.
The operation manual is also reqruired to do * - marked items.

1-2. Supplied Accessories

9 pins remote control cable (RCC-5G) 1
Screws for rack mounting (PSW 4 × 16) 4
Operation manual 1
Maintenance manual (Part 1) 1



1-3. Operating Conditions
1-4. Power Supply
1-5. Installation Space

Note

When the unit is transported, it is required to pack the unit into the specified packing materials.

1-6. Rack Mounting

1-7. Connecting Connectors and Cables
1-8. Signal Inputs and Outputs

1-9. Switch Settings on Connector Panel
1-10. Switch and Shorting Plug Setting on PC Boards
1-11. Mode Switching of Search Dial
1-12. Setup Menu Items
1-13. Reference System
1-14. Switching between 525/625 Line Systems
1-15. Settings and Adjustment when Peripheral Equipment is Connected

Note

If an error message is shown on the time counter, refer to “3-1. Error Message”.

1-3. Operating Conditions

CAUTION

Good air circulaiton is essential to prevent internal heat build-up. Place the unit in location with sufficient air circulation.
Do not block the ventilation holes of the cabinet and the front and rear panels.

Operating temperature: +5˚C to +40˚C
Operating humidity: 25 % to 80 %
(Condensation not allowed)
Storage temperature: −20˚C to +60˚C
Locations to avoid:

- Areas where the unit will be exposed to direct sunlight of any other strong lights.
- Areas near heat sources.
- Dusty areas or areas subject to vibration.
- Areas with strong magnetic field.
- Areas with much electrical noise.
- Areas with much static electricity.
- Areas that is impossible to find a specified room for installation.
  (Refer to “1-5. Installation Space” on page 1-3.)

Horizonal condition: Do not slant the front or rear of the unit more than 30˚.

CAUTION

Fix the unit securely to avoid slipping if the unit is not operated at horizonal place.

1-4. Power Supply

1-4-1. Voltage and Power Requirements

WARNING

Be sure to operate the unit within the range of following power voltage.

Power voltage: AC 100 to 240 V ±10 %
Power frequency: 50 Hz or 60 Hz
Power consumption: DNW-A30/A30P; 200 W (200 VA)
DNW-30/30P; 180 W (180 VA)
Rush current: Power voltage 100 V IN; 10 A
Power voltage 240 V IN; 20 A

This unit’s power line has a switching regulator with the power factor 98%.

Note

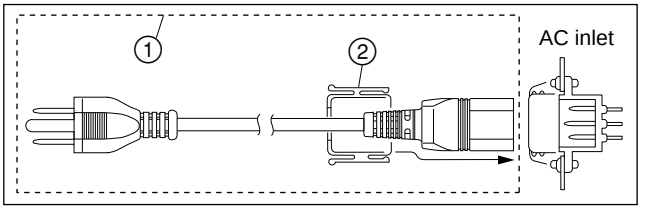
AC power supply is repuired a capacity which is commensurate with rush current.
If the capacity of the AC power supply is not enough, the breaker of AC power of a supply side may operate or this unit may not operate normally.

1-4-2. Power Cord

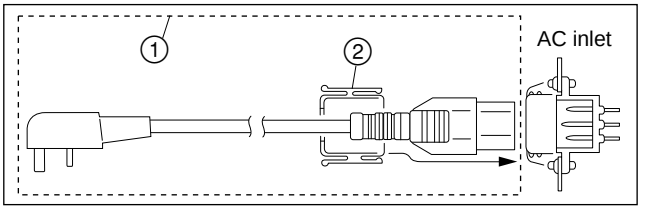
WARNING

Use the specified power cord only when connecting.
Never use a injured power cord.

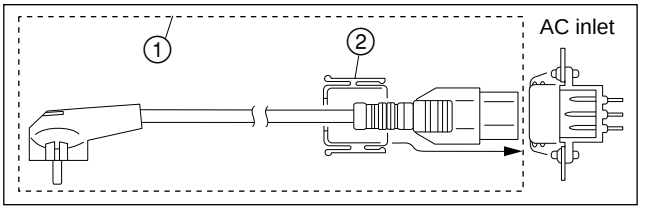
Power cord for the customer in the U.S.A. and Canada.
①DK-2401(UC) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(UC).



Power cord for the customer in the United Kingdom.
①DK-2401(UK) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(UK).



Power cord for the customer in Europe except the United Kingdom.
①DK-2401(AE) (approx. 2.4 m)
② Plug holder (Black) 2-990-242-01
Plug holder is included in DK-2401(AE).

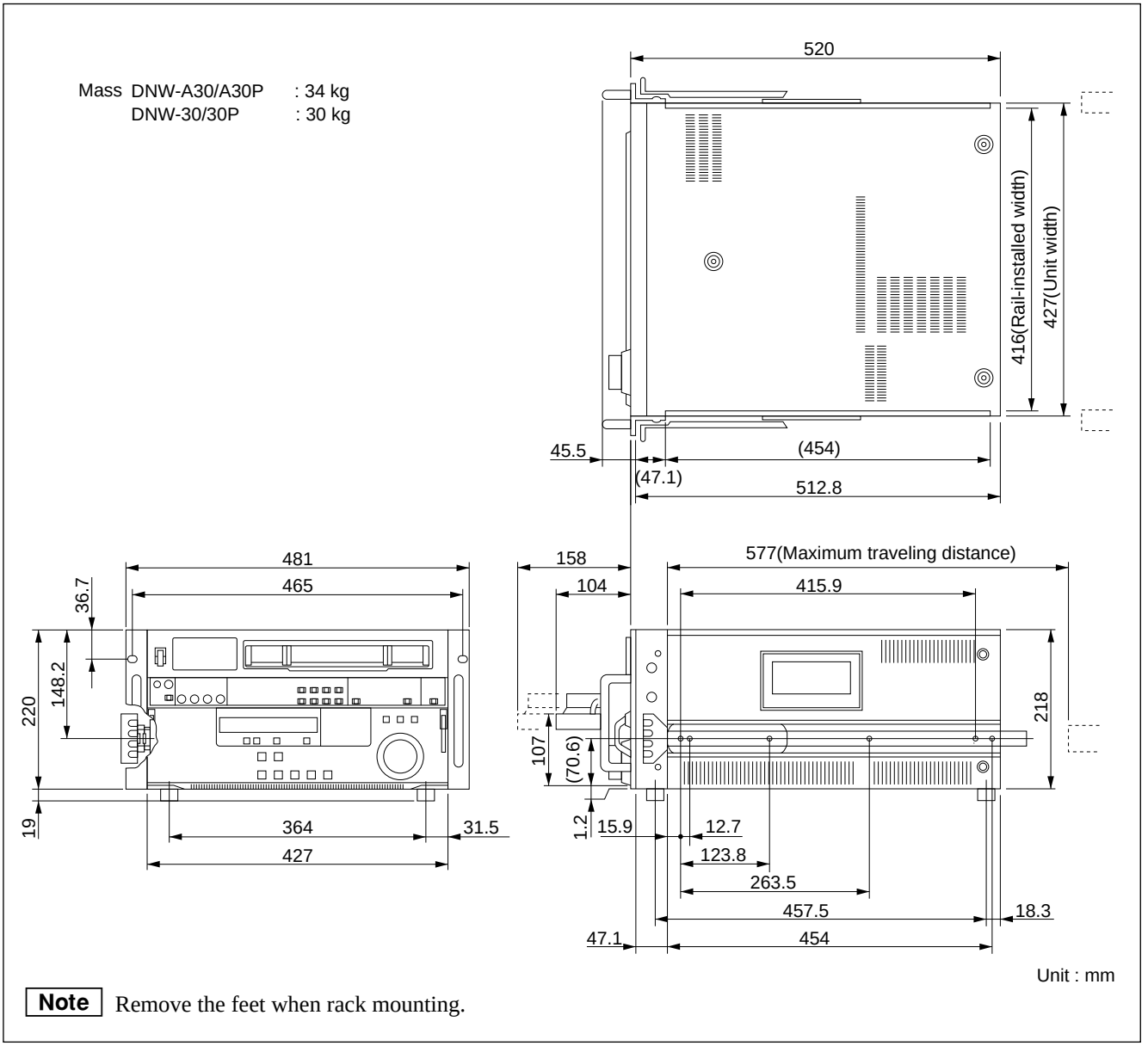


If the unit is used in the area except above, please consult with local Sony's sales/service office.

1-5. Installation Space

Do not block ventilation (upper lid, right side panel, lower portion of front panel, bottom plate) and exhaust part when installing because this unit is air-cooled by four fans.
The work area must be secured in consideration of the service operation. Especially, the rear side must be at least 40 cm away from the walls for ventilation.
When the unit is operated on a desk or similar condition, assure that the clearance from the upper lid and the right side panel is at least 4 cm.
However, it is recommended that the clearance above the unit is more than 40 cm in consideration of the service operation.

Note
For the operation with the upper lid removed, the air cooling effect using the fan decreases. Complete the work in a short time as far as possible when the unit is operated for inspection with the upper lid removed. Blow a wind using an electric fan so as to suppress an increase in temperature when the work is continued for a long time with the power turned on.



Note Remove the feet when rack mounting.

Dimensions when Rack-Mounting

1-6. Rack Mounting

Explains how to mount this unit in a 19-inch standard rack. Install this unit in a rack accurately as following procedure using specified rack mount rail.
If not, there is a fear of unexpected accident such as a drop of the unit or turnover of the rack.

Specified Rack Mount Kit

RMM-111 (Option) or
RMM-110 (Option)

CAUTION

Use the specified rack mount rail.
If not, injury could occur by drop of the unit because strength of rail is not enough.

Note

The color of rack angle of RMM-111 fits to the unit.
RMM-110 is the same consistance, strength and dimension as RMM-111, but the color of rack angle is different.

Parts Packed in RMM-110/111

- Slide rail 2
- Rack angle (handle) 2
- Rail bracket 4
- Plate nut (large) 4
- Plate nut (small) 4
- Screw (PSW4 × 16) 4
- Screw (B4 × 8) 8
- Hexagon socket head cap screw 8
- Flat washer 8
- Screw (RK5 × 14) 2
- Ornamental washer 2
- L-shaped hexagon wrench 1

Notes on Rack Mounting

- Adjust so that the temperature inside the rack is in the range of the unit's operating temperature.
- To prevent turning over the rack, fix the rack on the horizonal and firm floor securly using the bolts.
- Never remove the upper lid, bottom plate, and so on during rack mounting.
- Connect long enough cables on the connector panel, considering that the unit is pulled out from the rack.

Rack Mounting Procedure

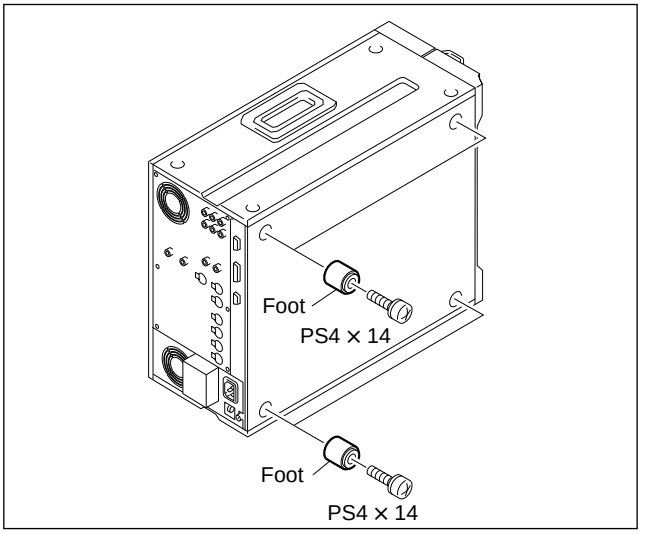
- **Remove of feet**

(1) Place the unit on its right side panel down.

Note

Lend your hand so that the lower handle does not hang down.

(2) Unscrew the four screws and remove the feet from the bottom plate of the unit.
(3) Replace the unit to the horizonal position.



CAUTION

Keep these screws and the feet that are removed in this procedure carefully.
Tighting torque: 1.0 N • m {10 kgf • cm}

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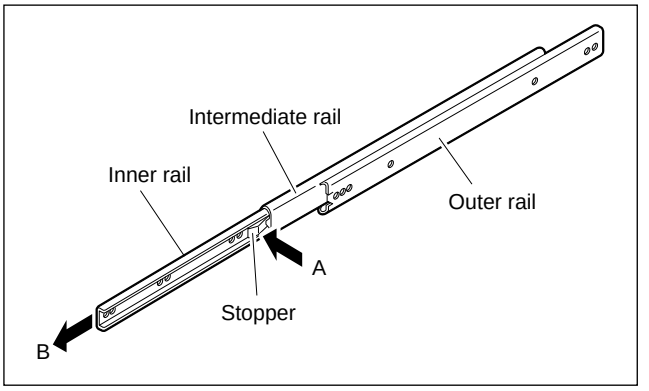
• Attachment of inner rails

(4) Pull out the inner rails from the two intermediate rails.

(5) While pressing the stopper of the inner rail in the direction of the arrow A in the figure, pull out it in the direction of the arrow B. (Pull out the other inner rail in the same way.)

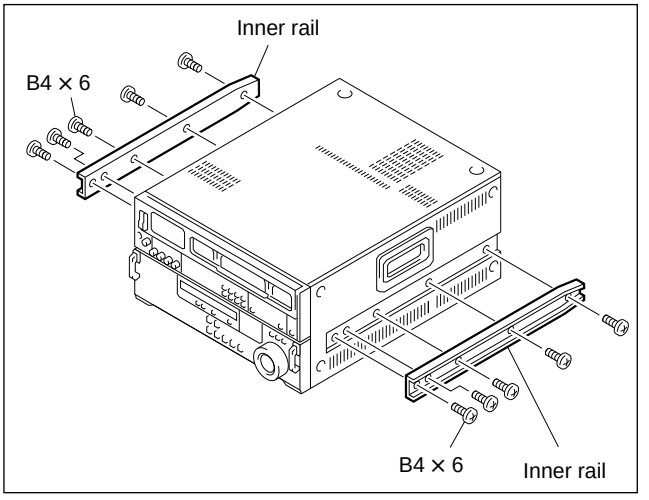


(6) Remove the ten screws from both sides (left and right) of the unit shown in the figure.

(7) Attach the two inner rails to both sides (left and right) of the unit using the screws removed in the procedure (6).
Tighting torque: 1.2 N • m {12.2 kgf • cm}

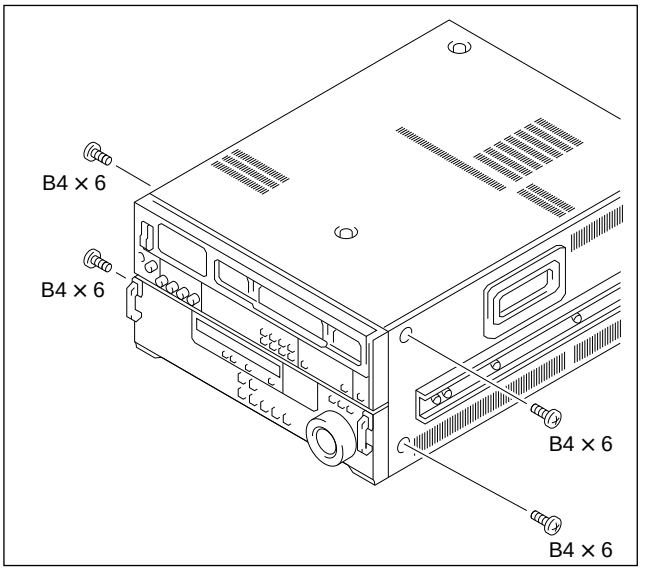
Note

Be sure to attach the inner rail using the screws (B4 × 6). If other screws are used, a failure occurs in the operation of the unit.



• Attachment of rack angles (handles)

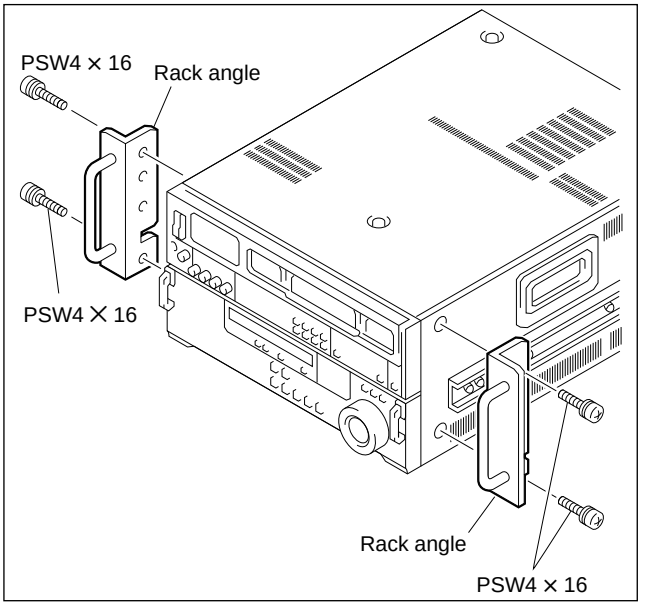
(8) Remove the four screws (B4 × 6) in the figure from both sides (left and right) of the unit.



Note

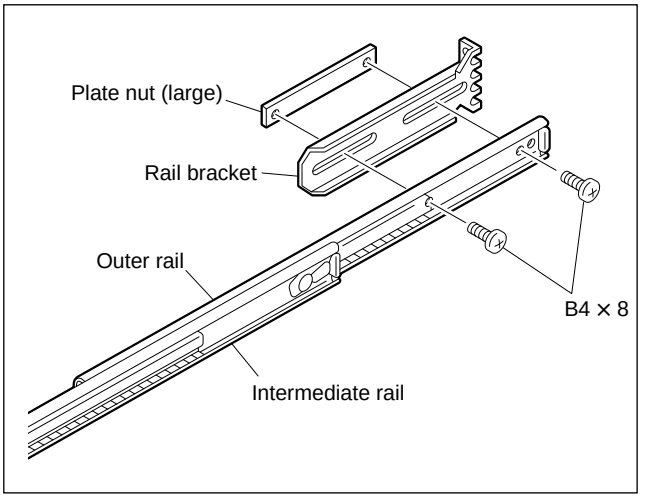
Keep these screws (B4 × 6) that are removed in the procedure (8) carefully.
Be sure to use these screws when directly attaching the side panels by screws after removing the rack angles.
If the rack angle fixing screws (PSW4 × 16) are used by mistake, a failure occurs in the operation of the unit because they are longer than the (B4 × 6) screws.

(9) Attach the two rack angles to both sides (left and right) of the unit using the four screws (PSW 4 × 16) supplied with the rack mount kit.
Tighting torque: 1.2 N • m {12.2 kgf • cm}

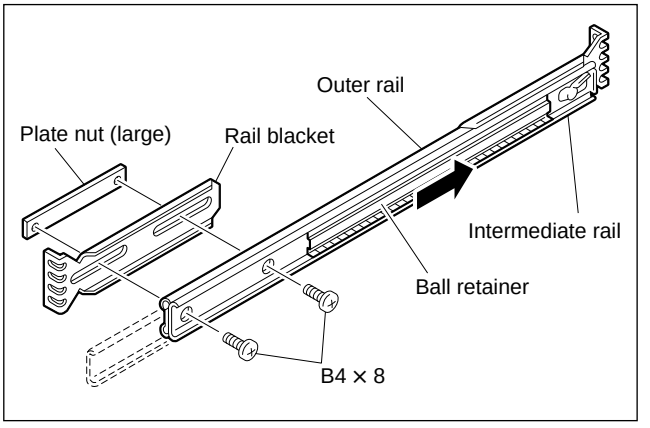


• Temporary attachment of rail brackets

(10)Stagger the outer rail and the intermediate rail as shown in the figure. And attach the rail bracket to the outer rail temporarily using the plate nuts (large) and the two screws. (Attach the rail bracket to the other outer rail temporarily in the same way.)



(11)Stagger the ball retainer as shown in the figure . And attach the rail bracket to the outer rail temporarily using the plate nuts (large) and the two screws. (Attach the rail bracket to the other outer rail temporarily in the same way.)

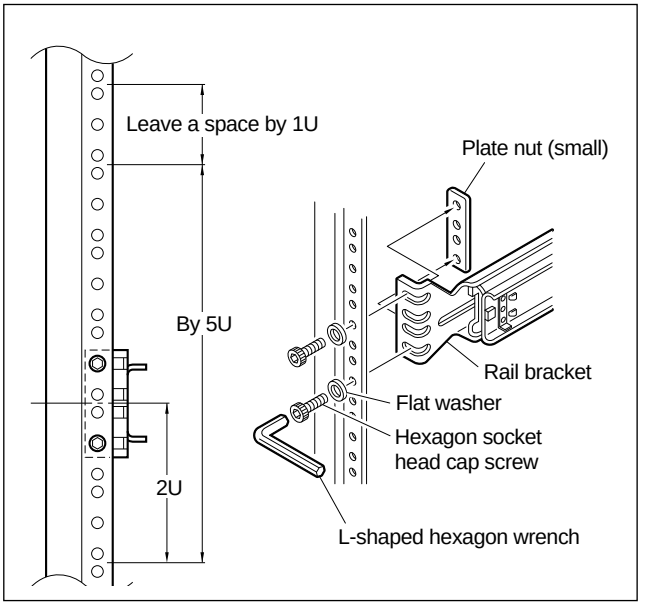


• Attachment of outer rails

(12)As shown in the figure, fix the outer rails on both sides (left and right) temporarily to the 2U position from the bottom of the space by 5U for installing this unit, with eight hexagon socket head cap screws and eight flat washers (front and rear, and right and left positions).

Note

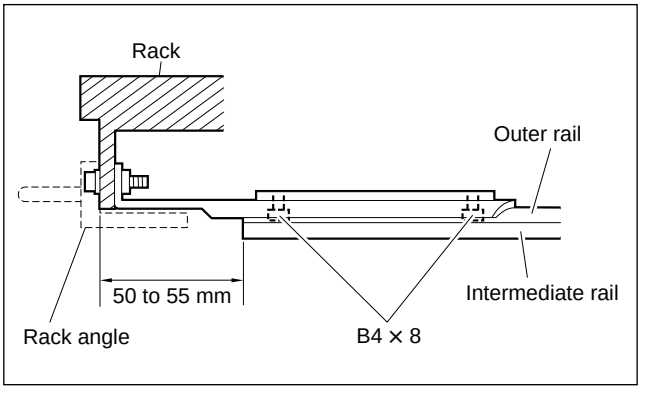
Be sure to leave a space on the top of this unit by 1U to reduce an increase in the internal temperature of this unit.



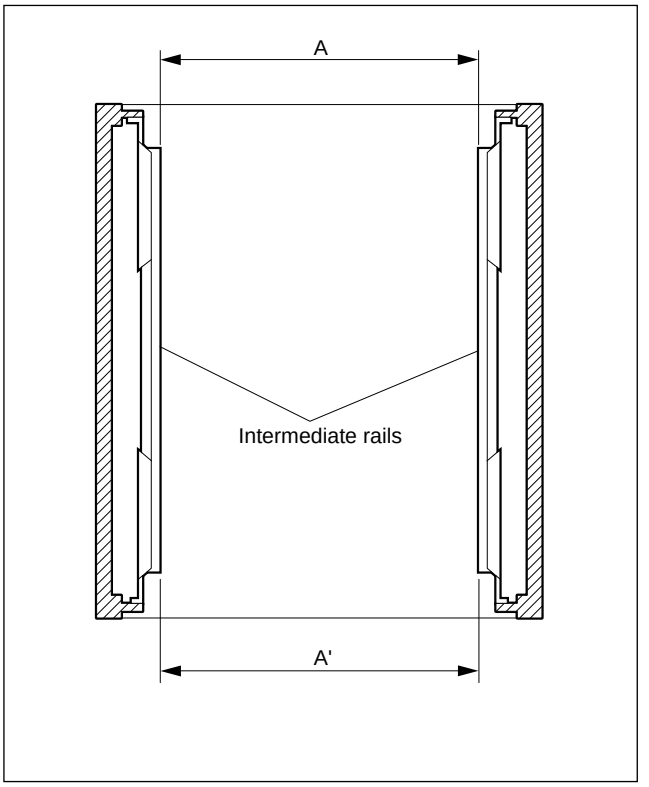
(13)Adjust the position of rails on both sides (left and right) so that the distance from the surface of the rack to the tip of the rail become 50 to 55 mm.

(14)Tighten the screws (four positions, total eight) attaching the rail bracket temporariry using the following tighting torque.

Tighting torque: 1.2 N • m {12.2 kgf • cm}



(15)Be sure that the distance between the intermediate rails on both sides (left and right) satisfy the specifications.



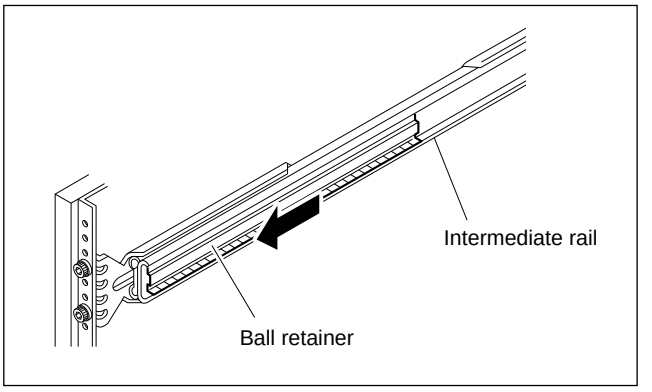
(16)Tighten the hexagon socket head cap screws (four positions, total eight) attaching the outer rails to the rack temporarily using the L-shaped hexagon wrench.

• **Mounting in rack**

CAUTION

Have two or more persons to do this work.

(17)Stagger the ball retainers of intermediate rails on both sides (left and right) toward you.



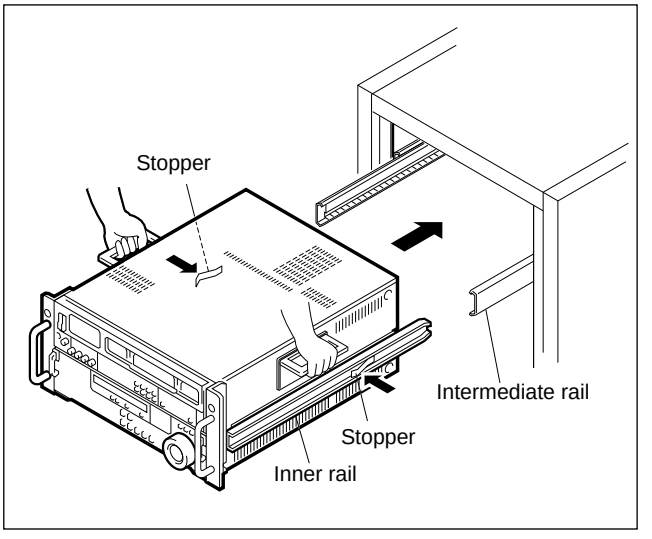
(18)Pull the rails out equal length from both sides (left and right) .

(19)Lift the unit holding the handles, insert the inner rails into the intermediate rails slowly.

(20)While pressing the stoppers on the both sides (left and right) , push the unit into the rack slowly.

CAUTION

Be careful not to catch your finger or hand in rack mount rail.

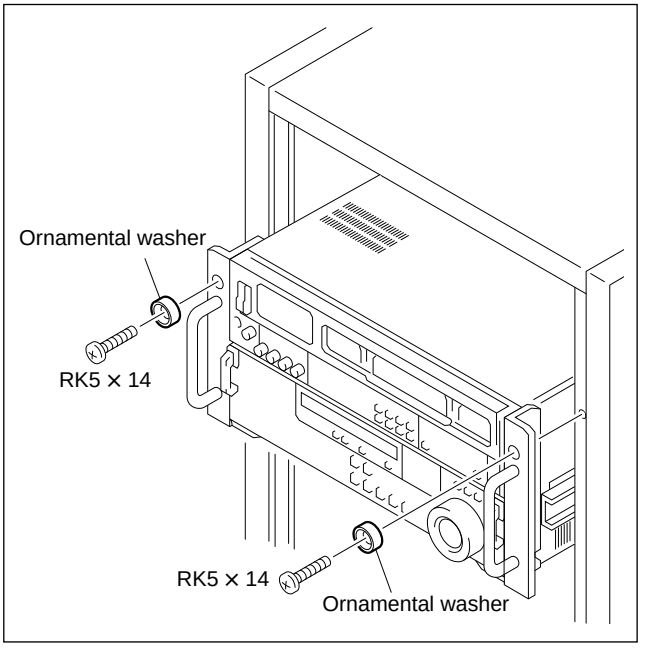


(21)Take the unit in and out from the rack about three times and be sure that slide rail moves smoothly.
If slide rail does not move smoothly, remove the unit and go back to “Attachment of outer rails” (procedure12).

CAUTIONS

- Have two or more persons to remove.
- This unit does not have the feet in this operation. When you put down this unit from the rack, be careful not to give a shock to it.

(22)Fix the unit to the rack using two screws and two ornamental washers.
Tighting torque: 1.2 N • m {12.2 kgf • cm}



1-7. Connecting Connectors and Cables

When external cables are connected to the connector of this unit, the hardware listed below (or the equivalents) must be used.

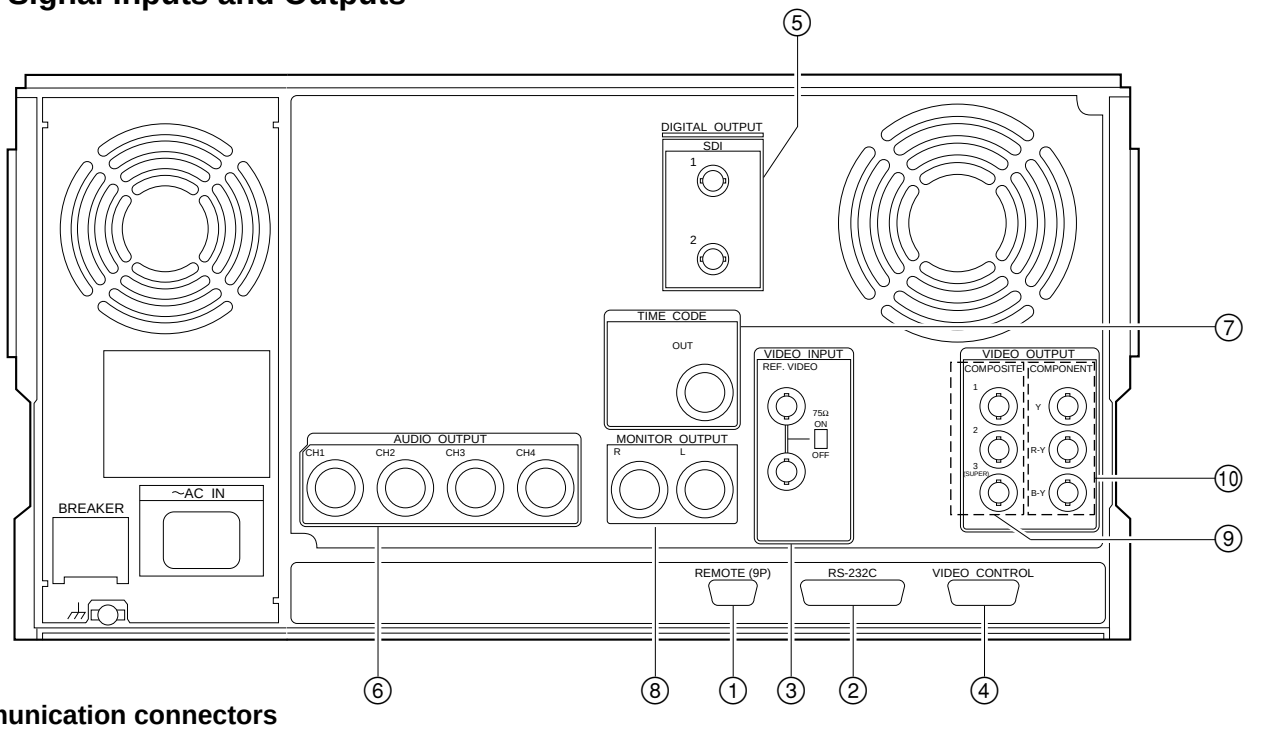
DNW side connector/ panel indication	Maching connector/cable	Sony part No.
VIDEO OUTPUT	BNC 75Ω, MALE	–
DIGITAL OUTPUT	BNC 75Ω, MALE (Note1	–
VIDEO INPUT	BNC 75Ω, MALE	–
AUDIO OUTPUT	XLR 3P, FEMALE	1-508-083-00
TIME CODE OUT	XLR 3P, FEMALE	1-508-083-00
MONITOR OUTPUT	XLR 3P, FEMALE	1-508-083-00
VIDEO CONTROL	D-SUB 15P, FEMALE and JUNCTION SHELL 15P	1-561-610-21 1-561-929-00
RS-232C	D-SUB 25P, MALE	1-566-356-11
REMOTE (9P)	9P remote control cable (RCC-G series) (Note2 or D-SUB 9P, MALE and JUNCTION SHELL 9P	– 1-560-651-00 1-561-749-00
PHONE (Note3	JM-60 stereo phone plug	–

Note 1: Coaxial cable length : max. 200 m
It is recommended to connect the BELDEN8281 cable or the equivalent to this connector.

Note 2: An RCC-5G cable (5 m) is supplied with this unit.

Note 3: It exsists on the front (upper control panel) .

1-8. Signal Inputs and Outputs



Communication connectors

① REMOTE (9P)	D-SUB 9P connector (RS-422A interface) Remote control
② RS-232C	D-SUB 25P connector (RS-232C interface) for ISR (Interactive Status Reporting)

Input connectors

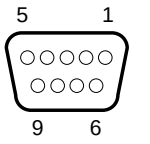
③ REF.VIDEO	BNC × 2 in loop through connection External reference video signal (Black burst or composite sync) 0.3 V p-p, 75 Ω, sync negative
④ VIDEO CONTROL	D-SUB 15P connector Digital video proccess control input

Output connectors

⑤ SDI DIGITAL	BNC × 2 Component digital (270 Mbit/s) in conformity to SMPTE 259M & ITU-R BT.656
⑥ AUDIO CH1/2/3/4 (Standard)	XLR 3-pin × 4 Analog audio 4 channels +4 dBm (Standard) (600 Ω load), low impedance, balanced
⑦ TIME CODE OUT	XLR 3-pin × 1 Time code 2.2 V p-p, low impedance, balanced
⑧ MONITOR R/L	XLR 3-pin × 2 Analog audio +4 dBm (Standard) (600 Ω load), low impedance, balanced
⑨ COMPOSITE VIDEO	BNC × 3 (including 1 for character superimpose) Analog composite video 1.0 V p-p, 75 Ω, sync negative
⑩ COMPONENT VIDEO	BNC × 3 (1 set) Analog component video Y : 1.0 V p-p, 75 Ω, sync negative R-Y/B-Y : 0.7 V p-p, 75 Ω
PHONE (Upper control panel)	JM-60 stereo phone jack Analog audio

REMOTE (9P): 9-pin (female)

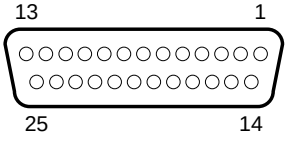
〈External view〉



Pin No.	Signal
1	GND
2	RM TX(–)
3	RM RX(–)
4	GND
5	PRIORITY
6	GND
7	RM TX(+)
8	RM RX(+)
9	GND

RS-232C: 25-pin (female)

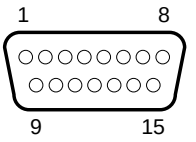
〈External view〉



Pin No.	Signal
1	FG ; Frame Ground
2	TXD ; Transmitted Data (Output)
3	RXD ; Received Data (Input)
4	RTS ; Request to Send (Output)
5	CTS ; Clear to Send (Input)
6	DSR ; Data Set Ready (Input)
7	SG ; Signal Ground
8	DCD ; Data Carrier Detect (Input)
9 to 19	NC
20	DTR ; Data Terminal Ready (Output)
21 to 25	NC

VIDEO CONTROL: 15-pin (male)

〈External view〉



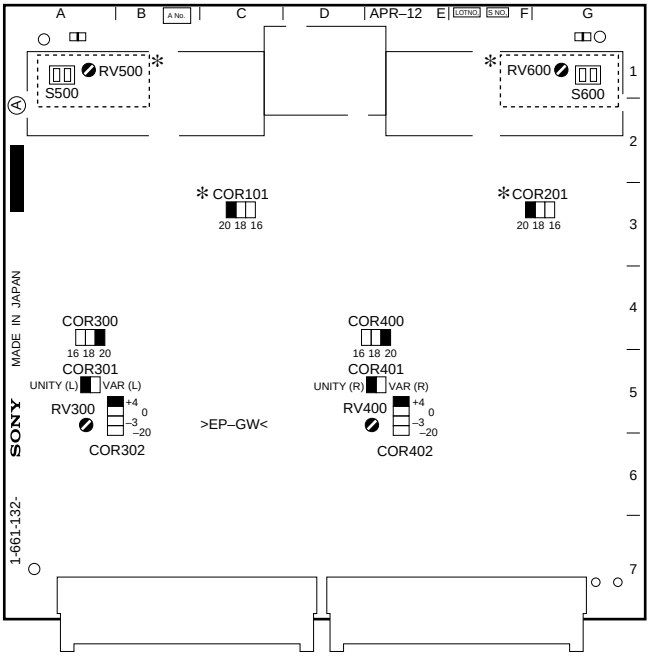
Pin No.	Signal	Terminal voltage (V)
1	SYNC CONT (Input)	–5 to +5
2	HUE CONT (Input)	–5 to +5
3	SC CONT (Input)	–5 to +5
4	VIDEO LEVEL CONT (Input)	–5 to +5
5	SETUP CONT (Input)	–5 to +5
6	CHROMA LEVEL CONT (Input)	–5 to +5
7	REG –12V (Output)	–12
8	GND	——
9 to 12	NC	——
13	Y/C DELAY CONT (Input)	–5 to +5
14	NC	——
15	REG +12V (Output)	+12

1-9. Switch Settings on Connector Panel

When the unit is installed, be sure to set the 75 Ω termination switch of reference video input.
Refer to the Operation manual “Section 2. Location and Function of Parts” for setup.

1-10. Switch and Shorting Plug Setting on PC Boards

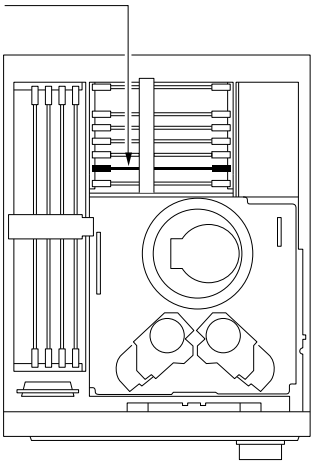
1-10-1. APR-12 Board



APR-12 Board (A Side) ✻DNW-A30/A30P only

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

HEAD TUNE switch (For Betacam/Betacam SP longitudinal audio playback)

(DNW-A30/A30P only)

It is not necessary to change the setting of these switches, when installing.

Channel	Ref. No.	Description
CH1	S500	By coupling with RV500, adjust the CH1 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.
CH2	S600	By coupling with RV600, adjust the CH2 head amp high frequency response. This switch is used in audio head dumping adjustment. When the unit is shipped, this switch is set to the position based on the adjustment condition.

Audio input headroom setting (For Betacam/Betacam SP longitudinal audio playback)

(DNW-A30/A30P only)

Channel	Ref. No.	Display	Input headroom (dB) [ ]: Factory setting		
			[20]	18	16
CH1	COR101	20	Short	Open	Open
		18	Open	Short	Open
		16	Open	Open	Short
CH2	COR201	20	Short	Open	Open
		18	Open	Short	Open
		16	Open	Open	Short

Monitor output level setting

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	−3	−20	
L	COR302	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	
R	COR402	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		−3	Open	Open	Short	Open	
		−20	Open	Open	Open	Short	

Monitor output headroom setting

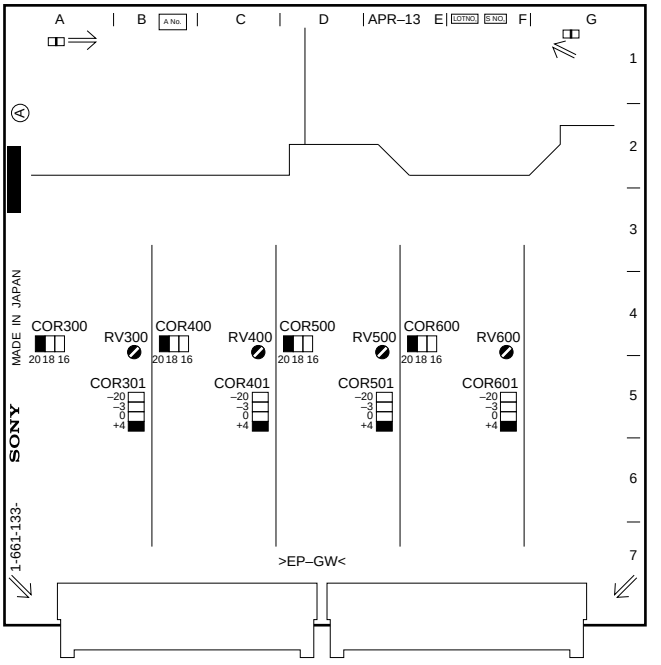
Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	18	16	
L	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
R	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	

Selecting fixed or variable monitor output level

When the level variable is selected, the level is adjusted with the PHONE level control.

Channel	Ref. No.	Display	Monitor output level	[ ]: Factory setting
			[Fixed]	Variable
L	COR301	UNITY(L)	Short	Open
		VAR(L)	Open	Short
R	COR401	UNITY(R)	Short	Open
		VAR(R)	Open	Short

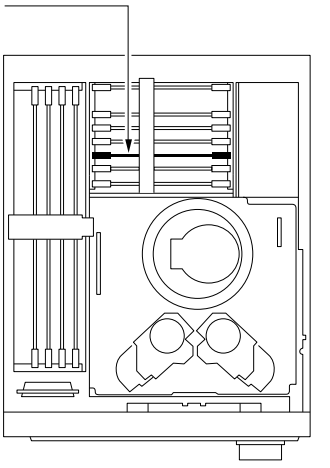
1-10-2. APR-13 Board



APR-13 Board (A Side)

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.



< Top View >

Audio output level setting

Channel	Ref. No.	Display	Output level (dBm/600 Ω) [ ]: Factory setting				Fine adjustment
			[+4]	0	–3	–20	
CH1	COR301	+4	Short	Open	Open	Open	RV300
		0	Open	Short	Open	Open	
		–3	Open	Open	Short	Open	
		–20	Open	Open	Open	Short	
CH2	COR401	+4	Short	Open	Open	Open	RV400
		0	Open	Short	Open	Open	
		–3	Open	Open	Short	Open	
		–20	Open	Open	Open	Short	
CH3	COR501	+4	Short	Open	Open	Open	RV500
		0	Open	Short	Open	Open	
		–3	Open	Open	Short	Open	
		–20	Open	Open	Open	Short	
CH4	COR601	+4	Short	Open	Open	Open	RV600
		0	Open	Short	Open	Open	
		–3	Open	Open	Short	Open	
		–20	Open	Open	Open	Short	

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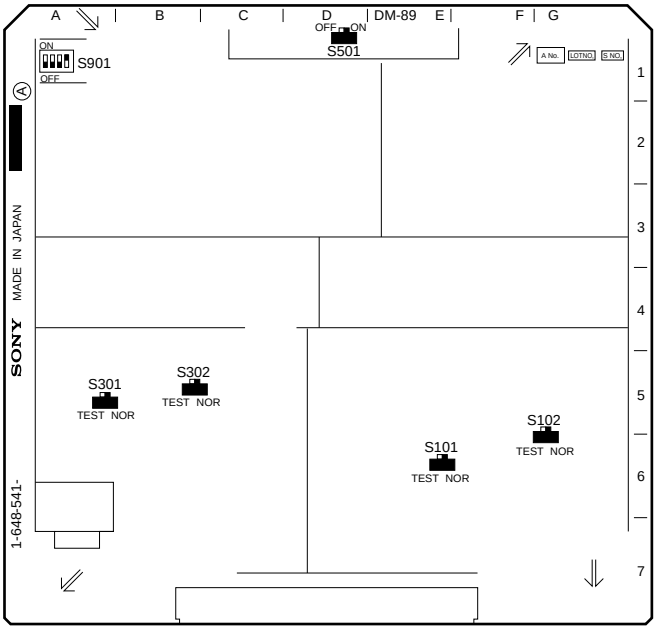
Audio output headroom setting

Channel	Ref. No.	Display	Output headroom (dB) [ ]: Factory setting			Fine adjustment
			[20]	**18**	**16**	
CH1	COR300	20	Short	Open	Open	RV300
		18	Open	Short	Open	
		16	Open	Open	Short	
CH2	COR400	20	Short	Open	Open	RV400
		18	Open	Short	Open	
		16	Open	Open	Short	
CH3	COR500	20	Short	Open	Open	RV500
		18	Open	Short	Open	
		16	Open	Open	Short	
CH4	COR600	20	Short	Open	Open	RV600
		18	Open	Short	Open	
		16	Open	Open	Short	

1-10-3. DM-89 Board (DNW-A30/A30P only)

Note

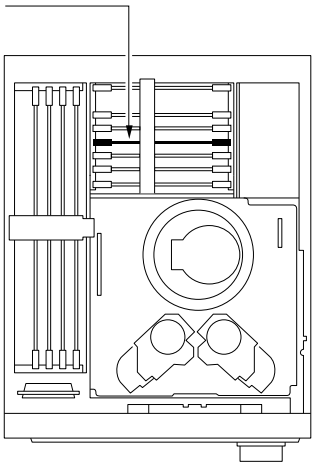
Never change the settings of the factory use switches.



DM-89 Board (A Side)

Note

Refer to "2-13. Pulling Out/ Insertion of Plug-in Board" for pulling out and insertion of board.



< Top View >

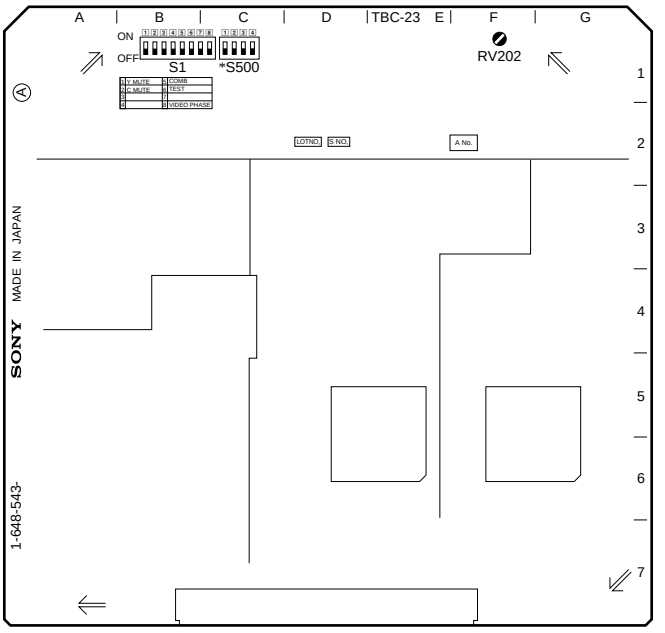
DM-89 board switch

Switch No.		Name	Description	Factory setting
S101		Y-RF LPF & EQ TEST (Y-RF low-pass filter & equalizer test)	Y-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP103. (GND to E102)	NORMAL POSITION
S102		————	Factory use	NORMAL POSITION
S301		C-RF LPF & EQ TEST (C-RF low-pass filter & equalizer test)	C-RF low-pass filter & equalizer test signal connection switch To adjust: Select the TEST position. Connect the input signal to TP303. (GND to E302)	NORMAL POSITION
S302		————	Factory use	NORMAL POSITION
S501		————	Factory use	ON
S901	1	RF adjustment switch	Use RF adjustment OFF (OPEN): Normal mode ON (CLOSE): Adjustment and test modes	OFF (OPEN)
	2	————	Factory use	OFF (OPEN)
	3	————	Factory use	OFF (OPEN)
	4	————	Factory use	OFF (OPEN)

1-10-4. TBC-23 Board (DNW-A30/A30P only)

Note

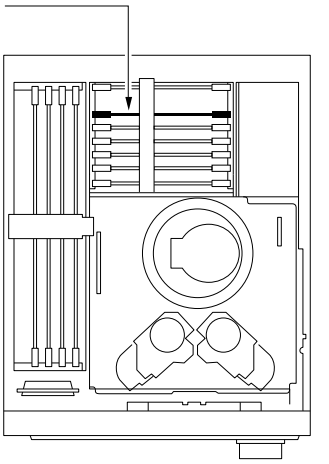
Never change the settings of the factory use switches.



TBC-23 Board (A Side)

Note

Refer to "2-13. Pulling Out/ Insertion of Plug-in Board" for pulling out and insertion of board.



< Top View >

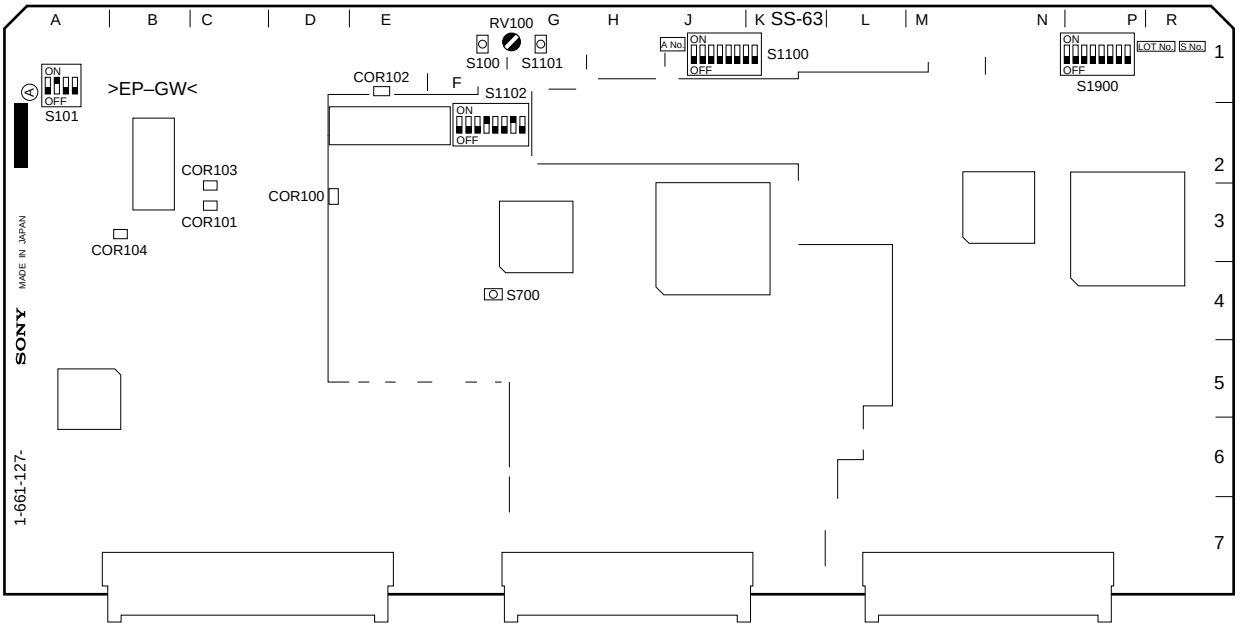
TBC-23 board switch

Switch No.		Name	Description	Factory setting
S1	1	Y MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Mute luminance signal	OFF (OPEN)
	2	C MUTE	OFF (OPEN) : Normal mode ON (CLOSE) : Mute color difference signal	OFF (OPEN)
	3	————	Factory use	OFF (OPEN)
	4	————	Factory use	OFF (OPEN)
	5	COMB	Select whether to activate a comb filter when the color difference signal has significant line crawl which cannot be corrected by LCC or not. OFF (OPEN) : Comb filter OFF ON (CLOSE) : Comb filter ON	OFF (OPEN)
	6	TBC TEST	Select whether to enable the TBC-23 and -24 boards self diagnostics or not. OFF (OPEN) : Normal mode ON (CLOSE) : Test (self diagnostics) mode	OFF (OPEN)
	7	————	Factory use	OFF (OPEN)
	8	VIDEO PHASE	Select whether to use VIDEO PHASE VR or not. OFF (OPEN) : VIDEO PHASE VR (RV202) disabled ON (CLOSE) : VIDEO PHASE VR (RV202) enabled	OFF (OPEN)
S500	1 | 4	————	Factory use	OFF (OPEN)

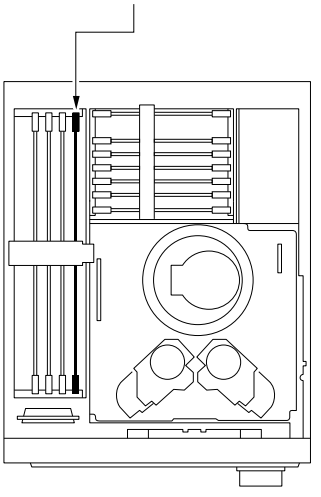
1-10-5. SS-63 Board

Note

Never change the settings of the factory use switches/short plugs.



SS-63 Board (A Side)



< Top View >

Note

Refer to “2-13. Pulling Out/ Insertion of Plug-in Board” for pulling out and insertion of board.

SS-63 board short plug

Ref. No.	Name	Description	Factory setting
COR 100	————	Factory use	OPEN
COR 101	————	Factory use	OPEN
COR 102	————	Factory use	OPEN
COR 103	————	Factory use	SHORT *
COR 104	————	Factory use	SHORT *

* : COR103 and 104 have no plug, but they are shorted by patterns.

SS-63 board switch

Switch No.		Name	Description	Factory setting
S100		REEL POSITION	Press this switch when changing the reel position. This switch does not operate in the state of installing the cassette compertment	————
S101	1	FLASH MEMORY	**Note** Do not change the setting of this switch during installation. Select the operation mode of flash memory OFF (OPEN): Normal mode ON (CLOSE): Writing mode	OFF (OPEN)
	2	ANA AUTO-TRACKING	Select whether to enable auto tracking operation or not during playing back the tape recorded based on the Betacam/Betacam SP format. OFF (OPEN): Not operate (The tracking is controled using RV-100.) ON (CLOSE): Operate **Note** The Betacam SX tape playback is carried out by non-tracking operation.	ON (CLOSE)
	3	ANA DISABLE	Select whether to prohibit analog Betacam tape playback or not. OFF (OPEN): Enable ON (CLOSE): Disable	OFF (OPEN)
	4	SV ERR DISABLE	**Note** Do not change the setting of this switch during installation. This switch selects whether to disable the detection of a malfunctional error in a servo circuit. OFF (OPEN): Enable (normal) ON (CLOSE): Disable	OFF (OPEN)
S700		SYSTEM RESET	Press this switch when resetting system control operation.	————
S1100	1	EXTENDED MENU	OFF (OPEN): Not display extended menu of set up menu ON (CLOSE): Displays extended menu of set up menu	OFF (OPEN)
	2	MAINTE MODE ACCESS	OFF (OPEN): Not enter into maintenance mode from lower control panel ON (CLOSE): Enters into maintenance mode from lower control panel	OFF (OPEN)
	3 | 8	————	Factory use	OFF (OPEN)
S1101		MAINTE MODE START	Press this switch when starting maintenance mode	————
S1102		**Note** Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit. But set this switch according to each unit when replacing the board.		
	1 to 6	MODEL ID SWITCH	DNW-A30/A30P / DNW-30/30P 1: OFF (OPEN) / OFF (OPEN) 2: OFF (OPEN) / OFF (OPEN) 3: OFF (OPEN) / OFF (OPEN) 4: ON (CLOSE) / ON (CLOSE) 5: OFF (OPEN) / OFF (OPEN) 6: OFF (OPEN) / ON (CLOSE)	————
	7	J/SY	OFF (OPEN): Japan model ON (CLOSE): Except Japan model	ON (CLOSE)
	8	525/625	OFF (OPEN): 525/60 model ON (CLOSE): 625/50 model	NTSC model : OFF (OPEN) PAL model : ON (CLOSE)
S1900	1 | 8	————	Factory use	OFF (OPEN)

1-11. Mode Switching of Search Dial

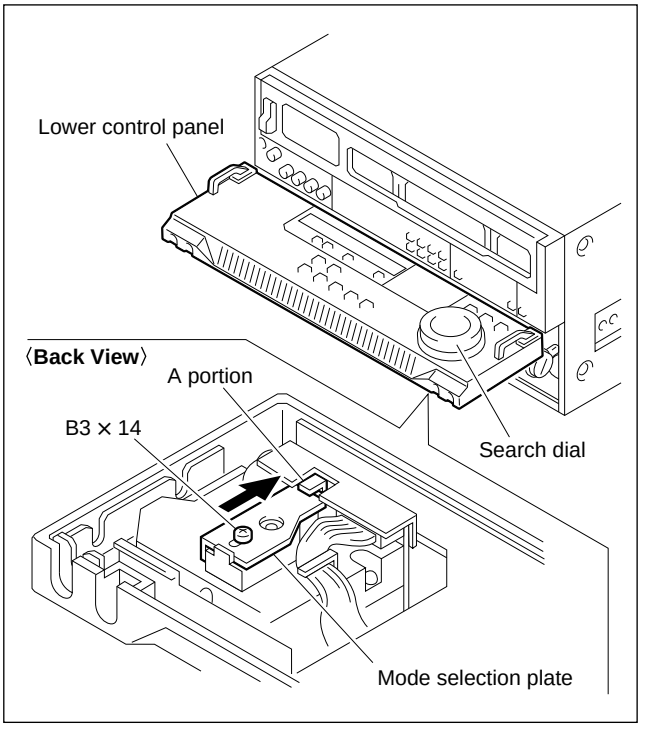
There are two kinds of operation to switch the search dial of this unit to jog mode or shuttle mode.

- **SHUTTLE/JOG button selecting**
  When you press the SHUTTLE button, the digital videocassette player is switched to shuttle mode.
  When you press the JOG button, the digital videocassette player is switched to jog mode.

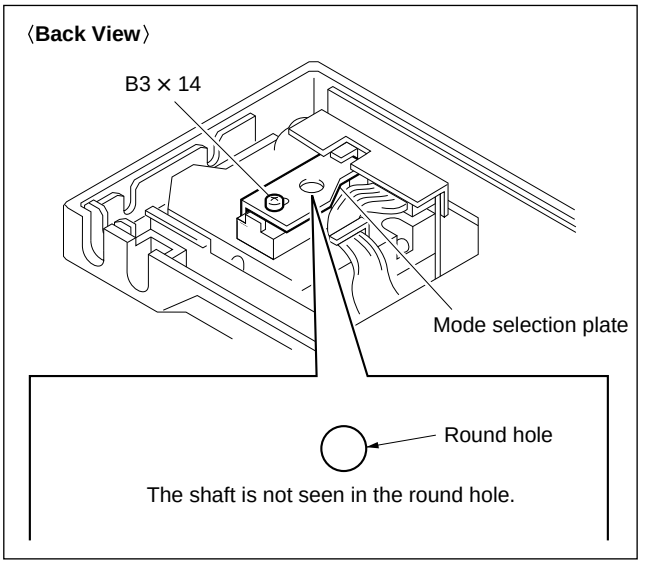
- **Search dial pressing**
  When you press the dial, the digital videocassette player toggles between shuttle and jog modes.
  It is possible to prohibit a manner of toggling.

Prohibiting Search Dial Pressing

1. Turn off the power.
2. Fix a lower control panel at 90˚.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the A portion.

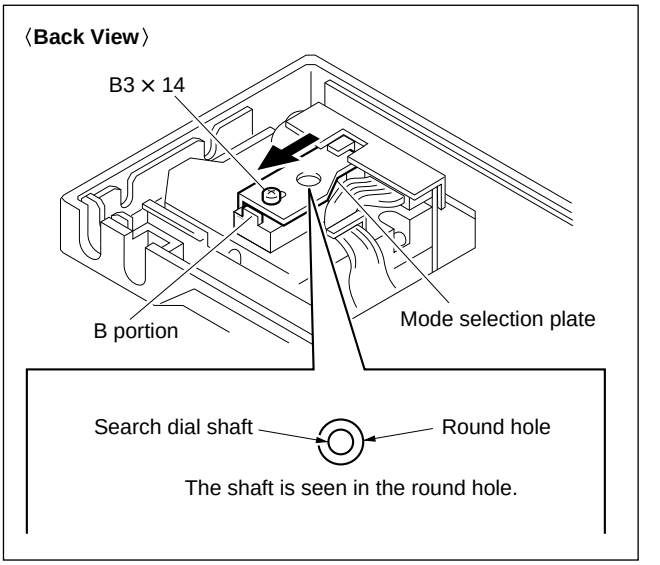


5. After checking that the shaft of the search dial is not seen in the round hole of the mode selection plate and then tighten the screw.



Allowing Search Dial Pressing

1. Turning off the power.
2. Fix a lower control panel at 90˚.
3. Loosen a screw on the backside of the search dial as shown in the figure.
4. Slide the mode selection plate in the direction indicated by the arrow until it touches the B portion.
5. After checking that the shaft of the search dial is seen in the round hole of the mode selection plate and then tighten the screw.



1-12. Setup Menu Items

The setup menu consists of a main menu and extended menu.
Refer to the Operation Manual for details of each menu.

Note

It is requred to adjust the switch setting of SS-63 board when allowing the system menu to display. Refer to “1-10-5. SS-63 Board”.

Main Manu

ITEM-H00 series: Hours meter parameter

- H01: OPERATION HOURS
- H02: DRUM RUNNING HOURS
- H03: TAPE RUNNING HOURS
- H04: THREADING COUNTER
- H12: DRUM RUNNING HOURS (Resettable)
- H13: TAPE RUNNING HOURS (Resettable)
- H14: THREADING COUNTER (Resettable)
- H15: AIRFILTER OPERATION HOURS (Resettable)

ITEM-000 series: Operational parameter

- 001: PREROLL TIME
- 002: CHARACTER H-POSITION
- 003: CHARACTER V-POSITION
- 004: SYNCHRONIZE
- 005: DISPLAY INFORMATION SELECT
- 006: LOCAL FUNCTION ENABLE
- 007: TAPE TIMER DISPLAY
- 009: CHARACTER TYPE
- 011: CHARACTER V-SIZE
- 013: 525/625 SYSTEM SELECT

ITEM-B00 series: Menu bank parameter

- B01: RECALL BANK 1
- B02: RECALL BANK 2
- B03: RECALL BANK 3
- B04: RECALL BANK 4
- B11: SAVE BANK 1
- B12: SAVE BANK 2
- B13: SAVE BANK 3
- B14: SAVE BANK 4
- B20: RESET SETUP

Extended Menu

ITEM-100 series: Operational panel parameter

- 101: SELECTION FOR SEARCH DIAL ENABLE
- 102: MAXIMUM TAPE SPEED (B-CAM) (DNW-A30/A30P only)
- 104: AUDIO MUTING TIME
- 105: REFERENCE SYSTEM ALARM
- 106: CAPSTAN LOCK
- 109: MUTE WHEN TAPE UNTHREAD
- 118: KEY INHIBIT SWITCH EFFECTIVE AREA
- 119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL
- 120: CTL LOCK IN VAR/SHTL
- 123: TAPE INDEX SELECT

ITEM-200 series: Remote interface parameter

- 201: PARA RUN

ITEM-300 series: Editing parameter

- 301: VAR SPEED RANGE FOR SYNCHRONIZATION
- 302: CAPSTAN RE-LOCKING DIRECTION

ITEM-400 series: Preroll parameter

- 401: FUNCTION MODE AFTER CUE-UP
- 403: AUTOMATIC PREROLL REFERENCE ENTRY
- 404: CUE-UP BY TC
- 405: CUE-UP BY CTL

ITEM-500 series: Tape protection parameter

- 501: STILL TIMER
- 502: TAPE PROTECTION MODE FROM SEARCH
- 503: TAPE PROTECTION MODE FROM STOP
- 504: DRUM ROTATION IN STANDBY OFF
- 505: STILL TENSION

ITEM-700 series: Video control parameter

703: BLANK LINE SELECT
705: EDGE SUBCARRIER REDUCER MODE
706: VERTICAL BLANKING V SHIFT
707: FORCED VERTICAL INTERPOLATION OFF
708: CHROMA PHASE ROTATION MODE
709: CAV LEVEL FORMAT (525/60 system only)
710: INTERNAL SIGNAL GENERATOR
712: VIDEO PROCESS ON CAP LOCK 2FIELD
713: VIDEO SETUP REFERENCE LEVEL (525/60 system only)
714: VIDEO ADJUST RANGE
715: VIDEO GAIN
716: CHROMA GAIN
717: CHORMA PHASE CONTROL
718: SETUP LEVEL (525/60 system) BLACK LEVEL (625/50 system)
719: SYSTEM PHASE SYNC
720: SYSTEM PHASE SC
721: Y/C DELAY
726: H BLANKING WIDTH

ITEM-800 series: Audio control parameter

802: DIGITAL AUDIO MUTE IN SHUTTLE MODE
805: AUDIO MONITOR OUTPUT MIXING
806: METER SCALE
807: AUDIO OUTPUT PHASE
808: INTERNAL AUDIO SIGNAL GENERATOR
809: AUDIO LEVEL METER DIMMER CONTROL

ITEM-F00 series: Adjustment use only

F01: AUTO NR IN SP MODE (DNW-A30/A30P only)
F02: EMERGENCY TAPE PROTECTION
F13: TRACKING CONTROL VIA SEARCH DIAL
F16: DEVICE TYPE MODIFY
F21: PROCESS CONT VR
F34: STOP PINCH OFF TIME

1-13. Reference System

The external reference video signal is used as a reference signal in this unit.
If the external reference video signal (REF.VIDEO input) is not input, the reference signal generated in the inside of this unit is automatically selected.

Alarm Display for Reference Signal

1. Blinking of the STOP button

This button blinks when no reference signal is input to REF VIDEO INPUT connector.
(This function can be inhibited in setup menu ITEM-105)

1-14. Switching between 525/625 Line Systems

In the NTSC Model (DNW-A30/30)

This unit can be switched from 525/60 system to 625/50 system. The tape recorded based on the Betacam SX format of 625/50 system can also be played back by switching the system. The signal of 625/50 system is output from all output connectors.

Notes

- The tape recorded based on the Betacam/Betacam SP format of 625/50 system cannot be played back in this unit.
- External reference video signal of 625/50 system can be locked by the sync signal only, but cannot be locked by color framing in this unit.

In the PAL Model (DNW-A30P/30P)

This unit can be switched from 625/50 system to 525/60 system. The tape recorded based on the Betacam SX format of 525/60 system can also be played back by switching the system. The signal of 525/60 system is output from all output connectors.

Notes

- The tape recorded based on the Betacam/Betacam SP format of 525/60 system cannot be played back in this unit.
- External reference video signal of 525/60 system can be locked by the sync signal only, but cannot be locked by color framing in this unit.

Method of Switching

Set the ITEM-013 to ON and change the mode following message which is superimposed on the video monitor.
(It is necessary that the CHARACTER switch of the sub control panel is set to ON so that the message is superimposed on the video monitor.)

Refer to the Operation manual “Section 7. Menu System” for details.

1-15. Settings and Adjustment when Peripheral Equipment is Connected

1-15-1. VTR Constant Values Setting when Editor is Connected

When this unit is used by connecting to an editor, set the VTR constant values of the editor depending on the model of a player.

The VTR constant values of a connected editor

Model name	VTR CONSTANT1								VTR CONSTANT2							
	Data No.								Data No.							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
DNW-A30	B0	48	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-A30P	B1	48	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-30	B0	49	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B
DNW-30P	B1	49	00	96	07	07	03	8A	0A	07	FB	00	81	3D	FF	4B

The value is shown in hexadecimal notation.

Notes

1. Set the data of No.8 of the VTR CONSTANT 1 to “0A” for the following editors.
   - BVE-900 ROM version: less than or equal 1.08
   - BVE-600 ROM version: less than or equal 1.01
2. In case of remote-controlling this unit by the editor, set the setup menu ITEM No.401: FUNCTION MODE AFTER CUE-UP to “STOP”.

1-15-2. System Phase Adjustment

An external reference video signal must be input to this unit after they are adjusted so that SC-H conforms to the specification.

When Connecting to a Digital Switcher

Fundamentally, the system phase adjustment is not necessary.
Refer to the manual of digital switcher for details.

When Connecting to a Analog Switcher

Perform the system phase adjustment referring to the manual of the analog switcher.

The system phase is adjusted by using the SYNC knob and SC knob of SYSTEM PHASE on the sub control panel in this unit.

Notes

- Be sure to adjust in PB mode.
- The playback sound may be momentarily interrupted when the SYNC/SC knob is turned during tape playback.

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1-15-3. Setup Menu Setting

Analog Component Output Format Setting “ITEM-709” (525/60 system only)

The output (SUB-ITEM-1) side is set to “D-1” or “B-CAM” according to the operating system, respectively.

Section 2
Service Overview

2-1. Notes on Power Supply Block

2-1-1. Warning on Primary Circuit Block and Electric Shock

WARNING

The primary circuit consists of the AC-169 board with AC inlet, the circuit breaker, the POWER switch, and the power supply unit.
Be careful not to receive an electric shock when performing the maintenance and service works with the power turned on.
A primary voltage remains applied to the AC-169 board, circuit breaker, and POWER switch even if the POWER switch is turned off. For the work that requires no current conduction, therefore, turn off the POWER switch and disconnect the power cord.

2-1-2. Note on Resetting the Circuit Breaker

The circuit breaker of a primary circuit is mounted on the power panel of this unit. When an overcurrent flows in the primary circuit, the breaker operates and the button protrudes.
If the breaker operates, eliminate the cause for which an overcurrent flows, then push the button.

2-2. Cleaning when the Heads are Clogged

Clean using a cleaning cassette tape (specified product: BCT-5CLN) when the rotary heads are clogged.
For the cleaning, refer to “5-2-1. Cleaning by Cleaning Tape”.

WARNING

Clean the rotary heads in the prescribed procedure using a specified cleaning cassette tape. If not, the rotary heads may be abrasive or damaged.

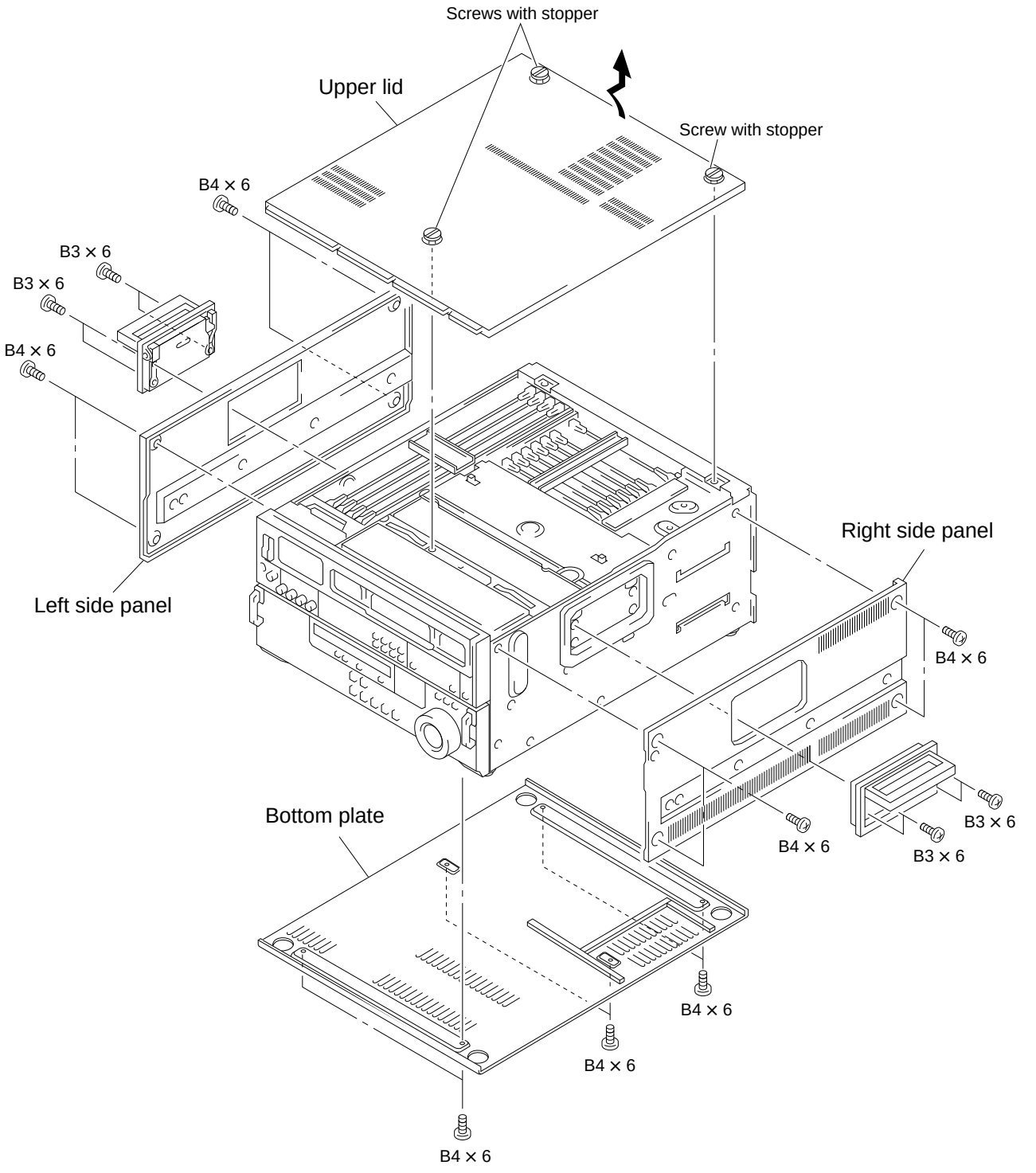
If the head clogging is not solved using a cleaning cassette tape, use a cleaning cloth.
For the cleaning using a cleaning cloth, clean according to the procedure of “5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning” after confirming the cautions and preparation in “5-2-2. General Information for Cleaning by Cleaning Cloth”.

2-3. Removal/Installation of Cabinet

2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation

Note

Turn off the power and unplug the power cord before starting the removal/installation.



Upper Lid

1. Loosen three fixing screws.
2. Remove the upper lid by moving in the direction indicated by the arrow.

For installation, perform in the reverse procedures of removal.

Side Panels

(The right and left side panels are the same in procedure.)

1. Remove four screws (B3 × 6), and remove the handle.
2. Remove four screws (B4 × 6), and remove the side panel.

For installation, perform in the reverse procedures of removal.

Bottom Plate

Note

- With the handle attached, place the unit on its right side panel down for removal and installation. Lend your hand so that the lower handle does not hang down.

1. Remove six screws (B4 × 6), and remove the bottom plate.

For installation, perform in the reverse procedures of removal.

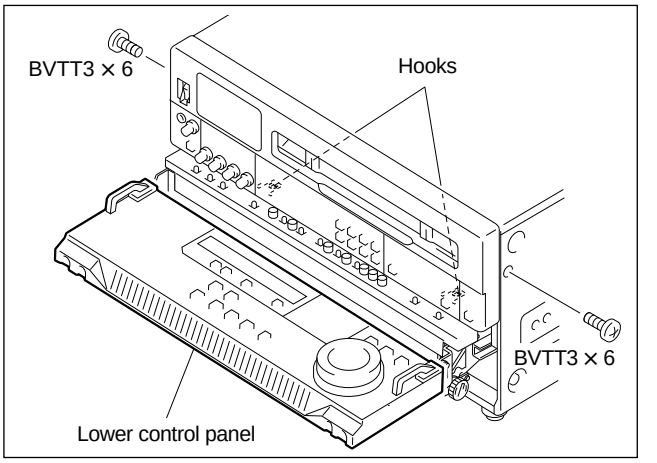
2-3-2. Control Panels Removal/Installation

Note

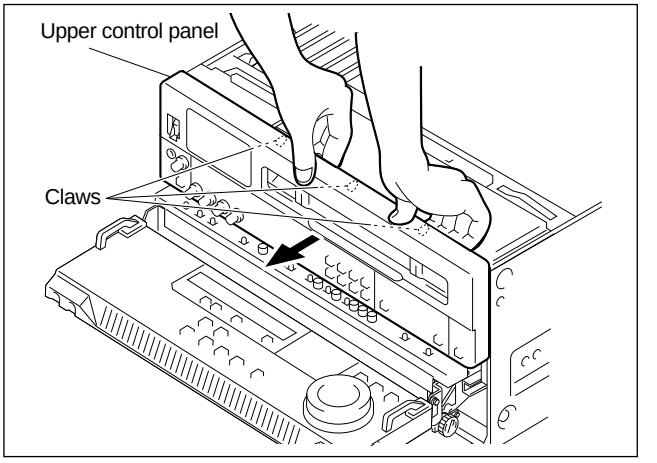
Turn off the power and unplug the power cord before starting the removal/installation.

Upper Control Panel

1. Remove the upper lid.
   (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
2. Remove the each one screw on the left and right sides.
3. Take both side handles on a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90 degrees position).
4. Unhook two hooks at lower portion on the upper control panel.



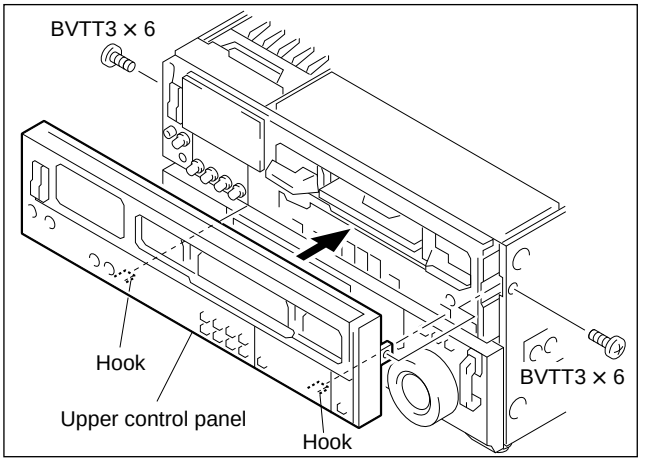
5. Unhook the claws at the upper control panel from the chassis, and remove it in the direction of the arrow.



For installation, perform in the reverse procedures of removal.

Note

Insert the hooks at the back of the panel into the convex portions of the chassis, then install the panel in the chassis. (Refer to the figure below.)

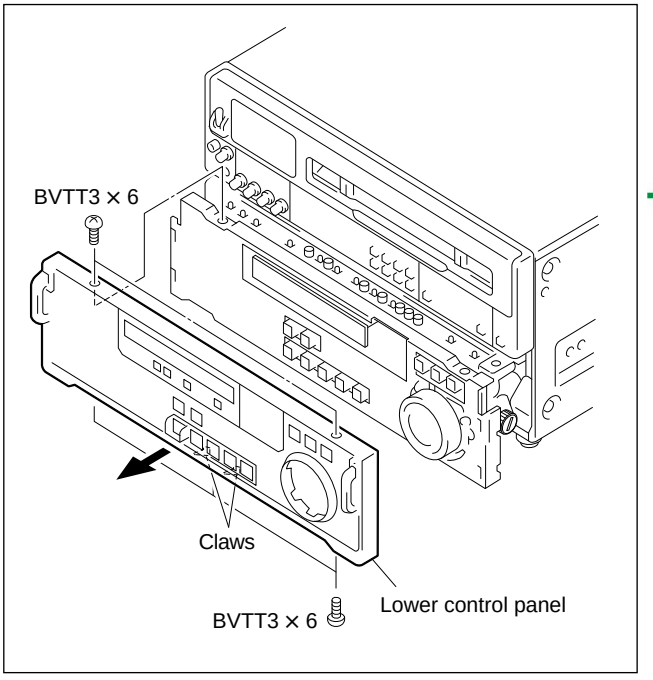


Note

Turn off the power and unplug the power cord before starting the removal/installation.

Lower Control Panel

1. Take both side handles of a lower control panel and pull them slightly forward, then pull them more strongly.
2. Remove five screws on the top and bottom of the lower control panel, then remove the panel.
   Note
   Open the lower control panel in this case. The screws at the bottom can be removed easily.
3. Remove two claws at the back of the lower control panel.
4. Remove the lower control panel in the direction of the arrow.



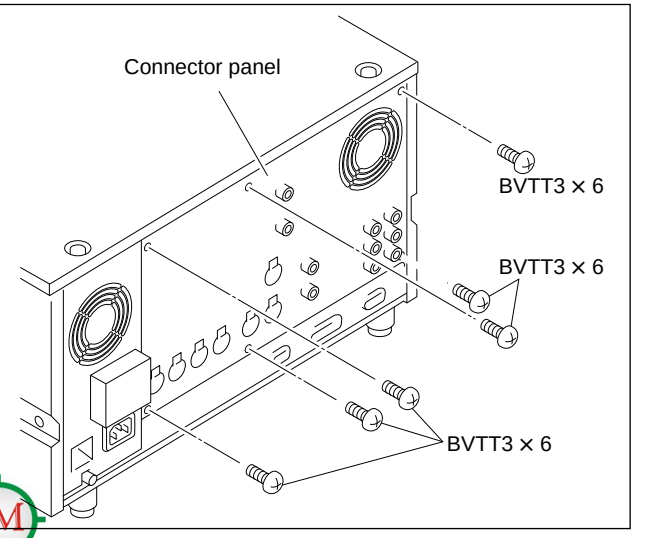
For installation, perform in the reverse procedures of removal.

2-3-3. Connector Panel Assembly Removal/ Installation

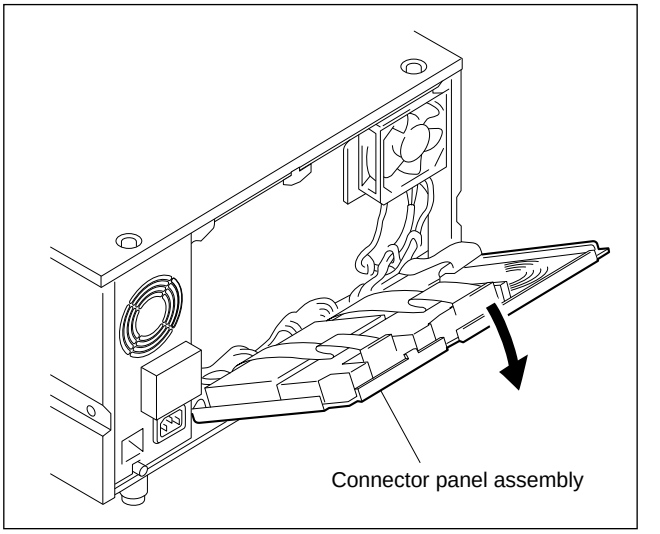
CAUTION

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

1. Remove six screws indicated ⇒ on the connector panel.



2. Remove the connector panel so as not to stretch the harness as shown in the figure.



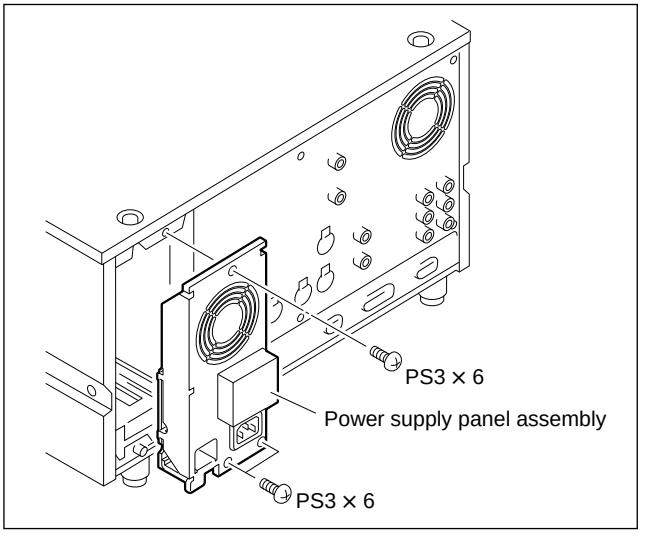
For installation, perform in the reverse procedures of removal.

2-3-4. Power Supply Panel Assembly Removal/Installation

CAUTION

For your safety, turn off the power and unplug the power cord before starting the removal/installation.

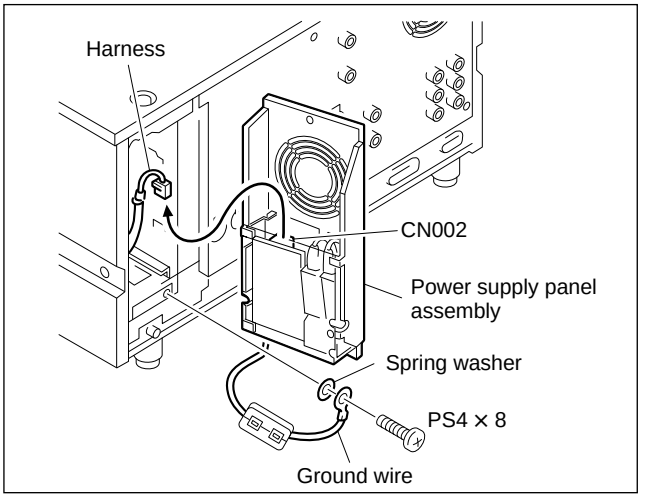
1. Remove three screws, then pull out the power supply panel assembly.



2. Disconnect the harness from the connector (CN002) on AC-169 board.
3. Remove one screw fixing the ground wire to the chassis and remove the power supply panel assembly.

Note

Be sure to remove the spring washer.



For installation, perform in the reverse procedures of removal.

Note

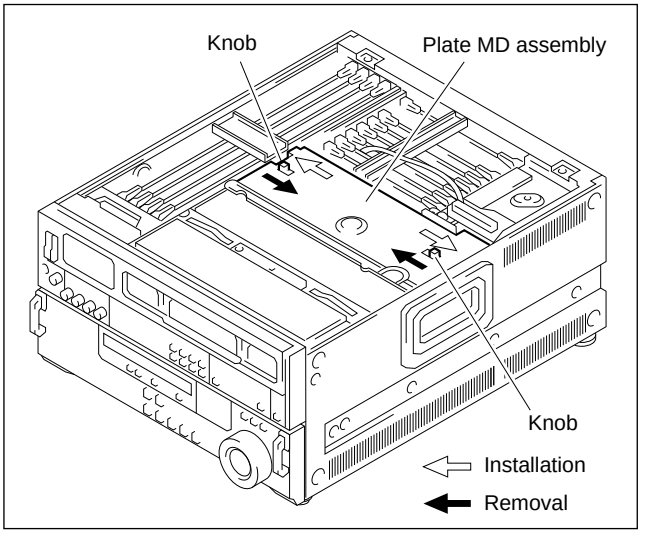
To fix the ground wire, put the spring washer between the terminal of ground wire and chassis.

2-4. Plate MD Assembly Removal/ Installation

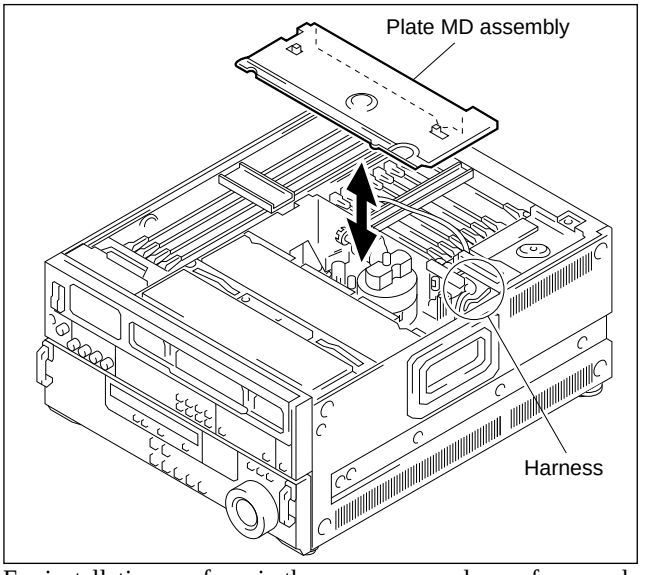
Note

Turn off the power and unplug the power cord before starting the removal/installation.

1. Remove the upper lid.
   (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
2. Slide the knobs on the plate MD assembly each in the inside.
   (Move the knobs to the outside. The plate MD assembly is then fixed.)



3. Remove the plate MD assembly.



For installation, perform in the reverse procedures of removal.

Note

Be careful not to pinch the harness under the plate MD assembly in the installation.

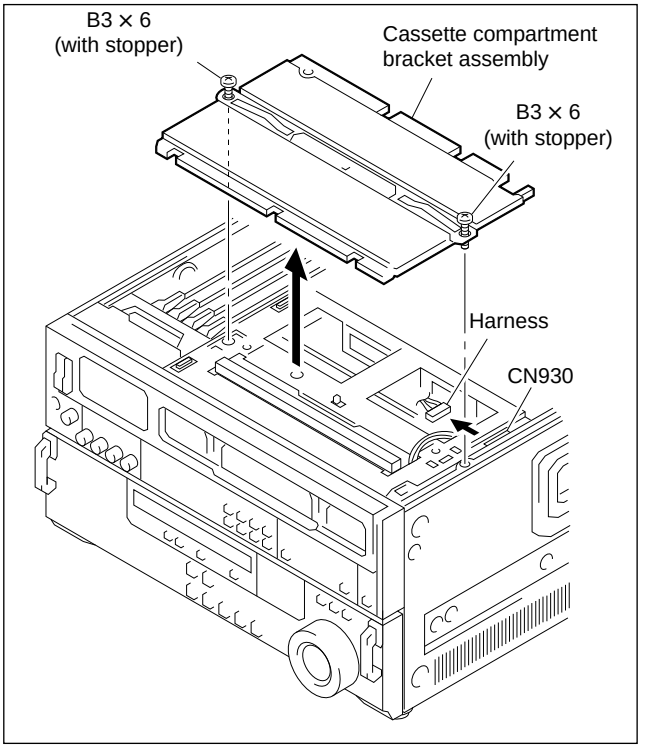
2-5. Cassette Compartment Removal/ Installation

Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- The cassette compartment cannot be removed with the cassette tape inserted. Press the EJECT button with the power turned on and eject the cassette tape.
  If the cassette compartment does not move due to an electric trouble, take out the cassette tape manually. (Refer to "2-12. How to Take Out the Cassette when the Tape is Slacking".)

Removal

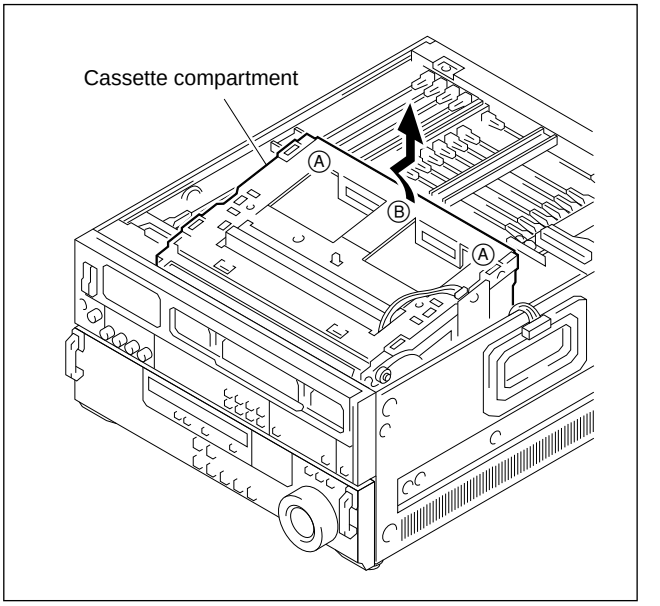
1. Remove the upper lid.
   (Refer to section 2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation.)
2. Remove the plate MD assembly.
   (Refer to section 2-4. Plate MD Assembly Removal/ Installation)
3. Loosen two screws, then remove the cassette compartment bracket assembly.
4. Disconnect the harness from the connector (CN930) on CL-29 board, and set the harness so that it does not put between chassis.



5. Hold the cassette compartment at the portions Ⓐ and lift up the cassette compartment slightly (by 1 cm). When the four cassette compartment positioning legs come off from the four positioning holes on a mechanical deck, shift the cassette compartment backward (by 1 cm) to the position where the cassette door can be completely seen when viewed from just above.
6. Hold the cassette compartment at the portion Ⓑ and rais it slowly upward, then remove it.

Notes

- Raise it slowly while sliding the cassette compartment slightly back-and-forth so that the gear on the right side of the cassette compartment does not touch the chassis.
- Never move the cassette compartment to right and left. If unnecessary force is applied to right and left, the gear or parts may come off.
- Place the cassette compartment with the cassette door up or with cassette compartment positioning legs down.
  (If it is placed on the cassette lid down, the flexible card wire might be damaged.)



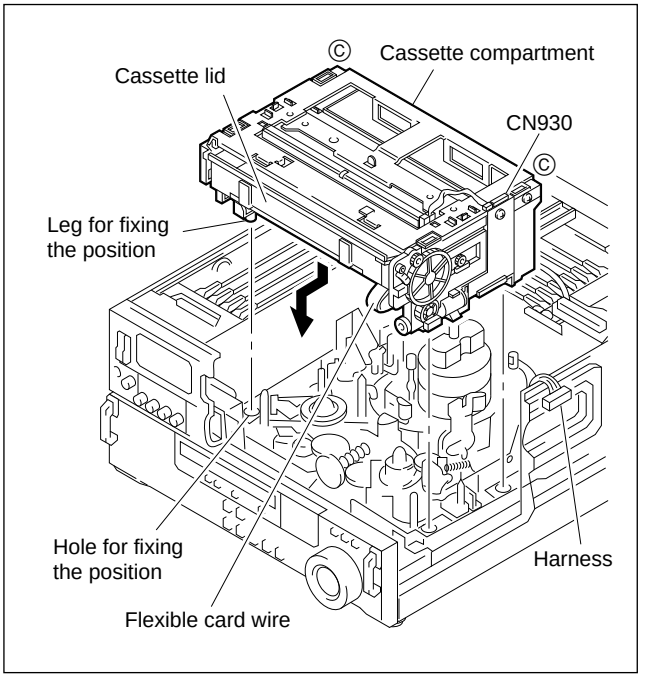
Installation

7. Install the cassette compartment while inserting slantingly in the direction as shown in the figure.

Notes

- Insert it slowly while sliding the cassette compartment slightly back and forth so that the gear on the right of the cassette compartment does not touch the chassis.
- Never move the cassette compartment to right and left. If unnecessary force is applied to right and left, the gear or parts may come off.

8. Insert the four legs of the cassette compartment for fixing the position into the four holes on the mechanical deck for fixing the position by pressing the portions Ⓒ as shown in the figure.



9. Connect the harness to the connector (CN930) on the CL-29 board.
10. Install the cassette compartment bracket assembly.
11. Install the plate MD assembly and the upper lid.

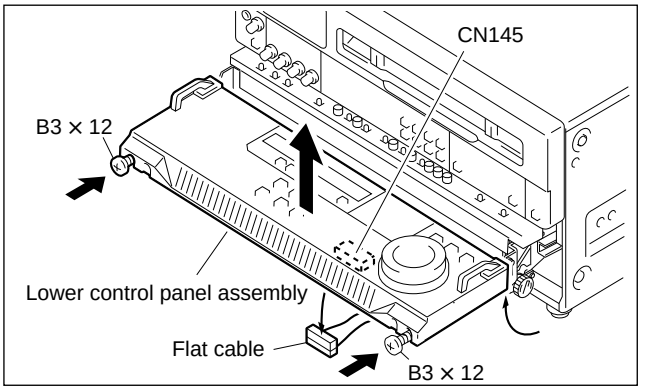
2-6. Lower Control Panel Assembly Removal/Installation

Note

Turn off the power and unplug the power cord before starting the removal/installation.

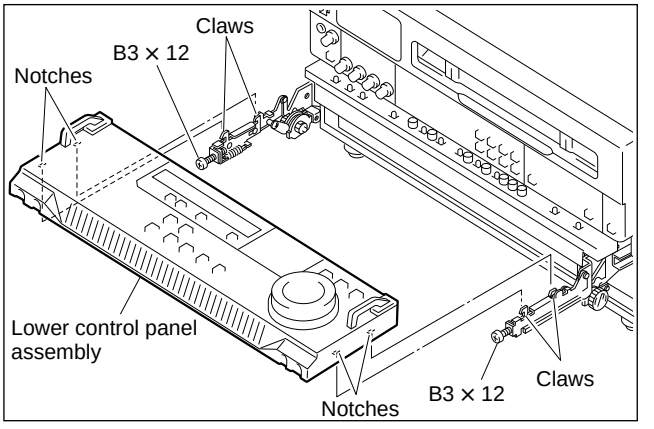
Removal

1. Take both side handles on a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90 degrees position).
2. Disconnect the flat cable from the connector (CN145) on the back of the lower control panel.
3. Loosen two screws in bottom corners of the lower control panel assembly. (Loosen the screws until screw's top are exposed from the lack of the panel assembly.)
4. Push the loosened screws the direction indicated by the arrow, and raise the lower control panel assembly.



Installation

5. Set the notches of the panel assembly to the claws of the arms and insert the lower control until making a click sound.
6. Fix the lower control panel assembly with two screws.



7. Connect the flat cable to the connector (CN145).
8. Return the lower control panel to 0 degree, then store.

2-7. Circuit Function

System configuration	No.	Board name	Circuit function
Digital process	1	* DPR-71	Digital data processor (Outer error correction)
	2	DPR-73	Digital data processor (Audio/Video processor)
	3	* DIF-42	4:2:2 component serial digital interface with Embedded audio
Video process	4	* VPR-17	Video signal processor (A-D, D-A, Reference clock generator, Composite encoder)
Analog BETACAM video PB process (DNW-A30/A30P only)	5	* DM-89	RF demodulator for Analog Betacam PB
	6	* TBC-24	TBC (A-D, Write clock generator)
	7	* TBC-23	TBC (Sequence and Reference)
Audio process	8	* APR-12	APR-12D : Audio D-A (Monitor), Analog Betacam audio (LAU) PB circuit APR-12E : Audio D-A (Monitor)
	9	* APR-13	Audio D-A (Analog CH1/2/3/4)
RF process	10	* EQ-56	EQ-56D : RF equalizer (PB EQ, Analog BETACAM PB buffer, Inner error correction) EQ-56E : RF equalizer (PB EQ, Inner error correction)
System/servo control	11	SS-63	System control, Servo control
	12	MS-50	Solenoids driver (Pinch, Brakes, Cleaning), Sensors input, Degaussing head driver
	13	DR-315	Motors driver (Drum, Capstan, Reels, Threading, Reel shift, Cassette up/down)
	14	* TC-96	TC PB circuit
Mech. deck driver/sensor	15	SE-341	Connection board with Condensation sensor
	16	PTC-54	Threading FG
	17	CCM-15	Threading motor
	18	CCM-15	Reel shift motor
	19	PD-35	Pinch solenoid connection, Tape end sensor connection
	20	TR-79	T tension sensor, Threading-end and Unthreading-end sensors
	21	PTC-59	Cassette's holes sensor
	22	RM-82	T reel motor
	23	SE-344	T reel FG
	24	RM-82	S reel motor
	25	SE-344	S reel FG
	26	PTC-71	Reel position sensors
	27	TR-78	S tension sensor

*: The actual name varies depending on the model.

Model name	DPR-17	DIF-42	VPR-17	DM-89	TBC-24	TBC-23	APR-12	APR-13
DNW-A30	DPR-17D	DIF-42D	VPR-17D	DM-89	TBC-24	TBC-23	APR-12D	APR-13D
DNW-A30P	DPR-17D	DIF-42D	VPR-17DP	DM-89P	TBC-24P	TBC-23PG	APR-12DP	APR-13D
DNW-30	DPR-17D	DIF-42D	VPR-17D	———	———	———	APR-12E	APR-13D
DNW-30P	DPR-17D	DIF-42D	VPR-17DP	———	———	———	APR-12EP	APR-13D

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System configuration	No.	Board name	Circuit function
Cassette compartment	28	CL-29	Cassette up/down motor, Cassette down sensors
	29	LP-81	Lamp of cassette compartment
	30	PC-70	Cassette-in sensors, Cassette size sensor
Front panel	31	FP-91	Panel function (Switches, LEDs) control, CAV control level conversion
	32	* VR-223	Phone level VRs, Phone connector
	33	VR-224	Audio PB level VRs
	34	* SWC-30	Upper control panel function (Switches, LEDs)
	35	* SWC-31	Sub control panel function
	36	* KY-364	Lower control panel function
	37	PTC-69	Search dial sensor, Dial solenoid connection
Motherboard, connector panel	38	* MB-648	Motherboard, Remote control connectors (REMOTE, RS-232C, VIDEO CONTROL)
	39	* CP-277	Connector board (Analog video) with output buffer
	40	* CP-278	Connector board (Analog audio output)
	41	* CP-297	Connector board (SDI output) with P-S
	42	* CP-301	Connector board (TC output, MONITOR output)
Power	43	AC-169	AC connector board with Breaker
	44	PS unit	Switching regulator (PS=Power supply)

*: The actual name varies depending on the model.

Model name	EQ-56	TC-96	VR-223	SWC-30	SWC-31	KY-364	MB-648	CP-277
DNW-A30	EQ-56D	TC-96D	VR-223D	SWC-30D	SWC-31D	KY-364D	MB-648D	CP-277D
DNW-A30P	EQ-56D	TC-96D	VR-223D	SWC-30D	SWC-31D	KY-364D	MB-648D	CP-277D
DNW-30	EQ-56E	TC-96D	VR-223D	SWC-30D	SWC-31E	KY-364D	MB-648D	CP-277D
DNW-30P	EQ-56E	TC-96D	VR-223D	SWC-30D	SWC-31E	KY-364D	MB-648D	CP-277D

Model name	CP-278	CP-297	CP-301
DNW-A30	CP-278D	CP-297D	CP-301D
DNW-A30P	CP-278D	CP-297D	CP-301DP
DNW-30	CP-278D	CP-297D	CP-301D
DNW-30P	CP-278D	CP-297D	CP-301DP

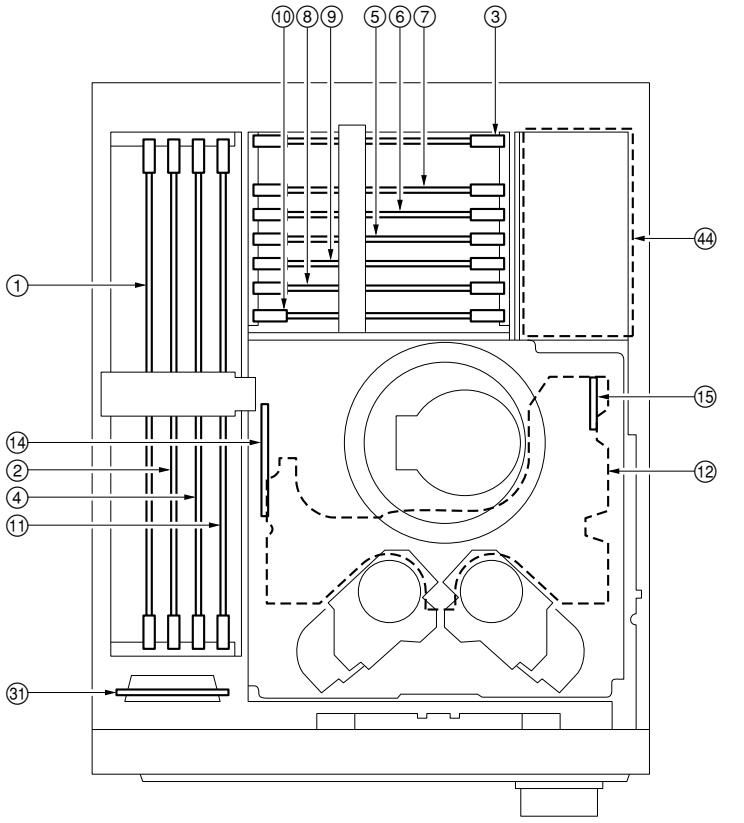
2-8. Location of Main Parts

2-8-1. Printed Circuit Boards and Power Supply Unit Location

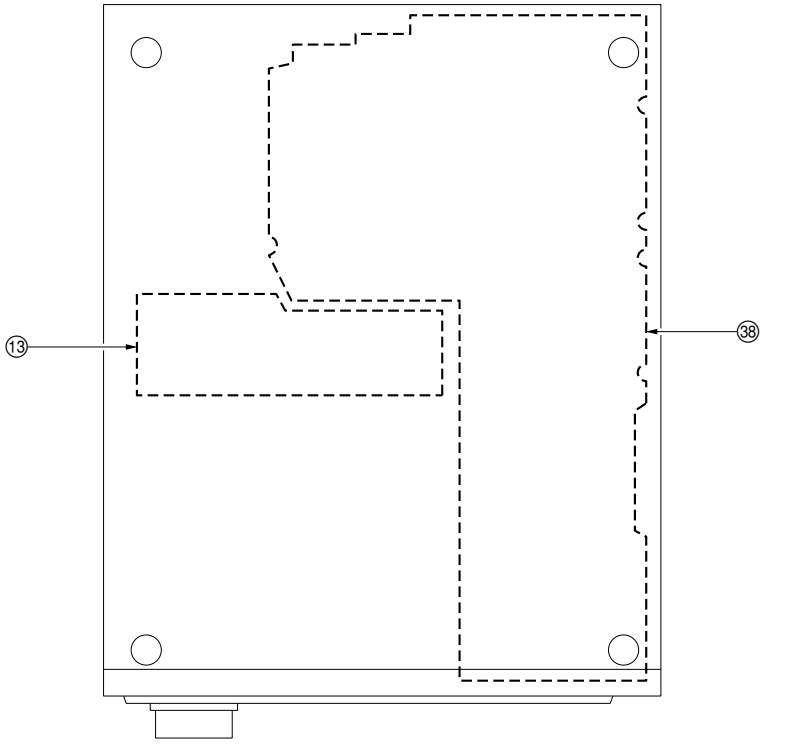
AC-169 ..... ㊸
APR-12 ..... ⑧
APR-13 ..... ⑨
CCM-15 ..... ⑰⑱
CL-29 ..... ㉘
CP-277 ..... ㊴
CP-278 ..... ㊵
CP-297 ..... ㊶
CP-301 ..... ㊷
DIF-42 ..... ③
* DM-89 ..... ⑤
DPR-71 ..... ①
DPR-73 ..... ②
DR-315 ..... ⑬
EQ-56 ..... ⑩
FP-91 ..... ㉛
KY-364 ..... ㊱
LP-81 ..... ㉙
MB-648 ..... ㊳
MS-50 ..... ⑫
PC-70 ..... ㉚
PD-35 ..... ⑲
PTC-54 ..... ⑯
PTC-59 ..... ㉑
PTC-69 ..... ㊲
PTC-71 ..... ㉖
RM-82 ..... ㉒㉔
SE-341 ..... ⑮
SE-344 ..... ㉓㉕
SS-63 ..... ⑪
SWC-30 ..... ㉞
SWC-31 ..... ㉟
* TBC-23 ..... ⑦
* TBC-24 ..... ⑥
TC-96 ..... ⑭
TR-78 ..... ㉗
TR-79 ..... ⑳
VPR-17 ..... ④
VR-223 ..... ㉜
VR-224 ..... ㉝

Power supply unit .... ㊿

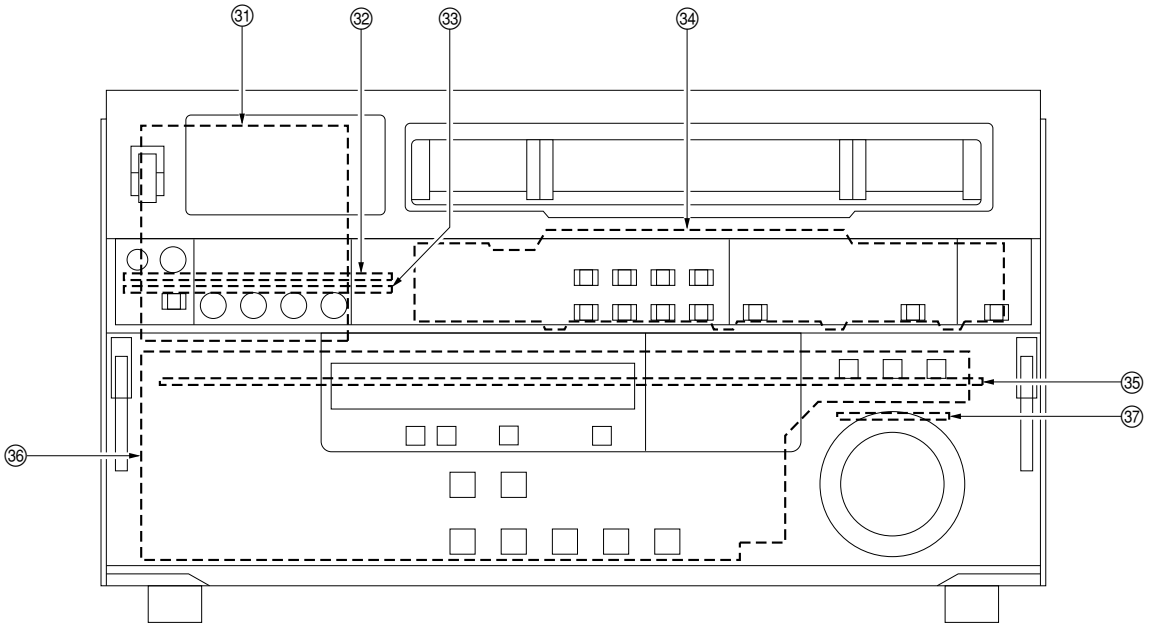
*: DNW-A30/A30P only



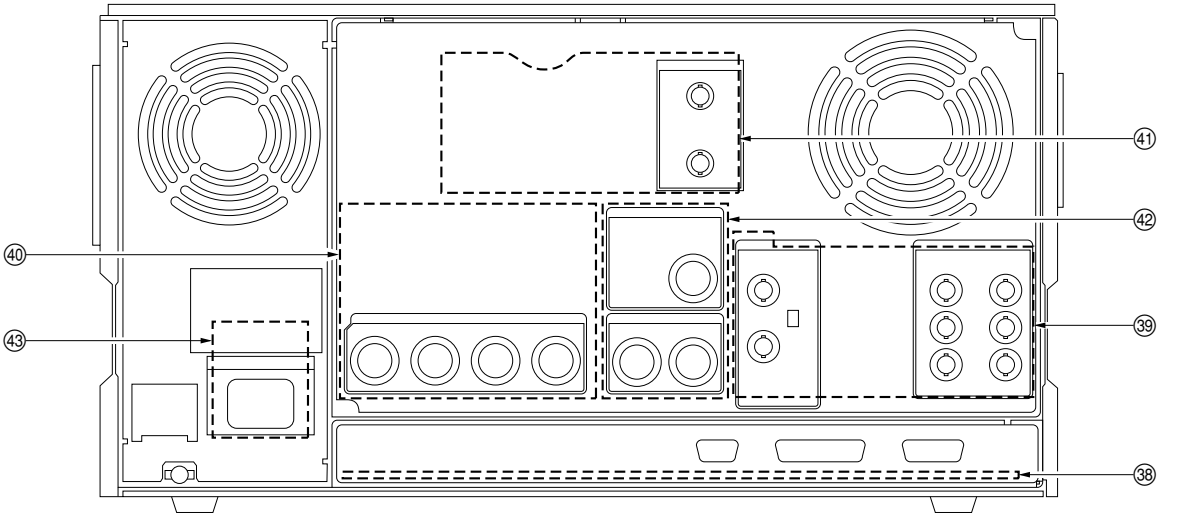
< Top View >



< Bottom View >



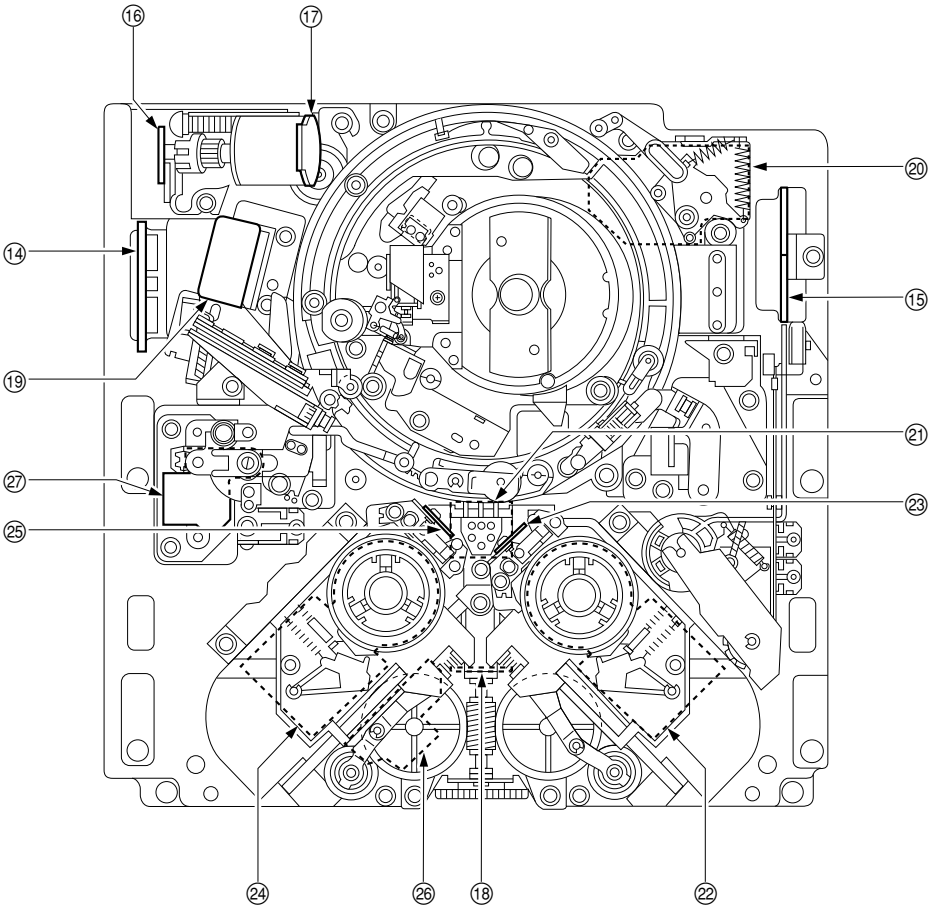
< Front View >



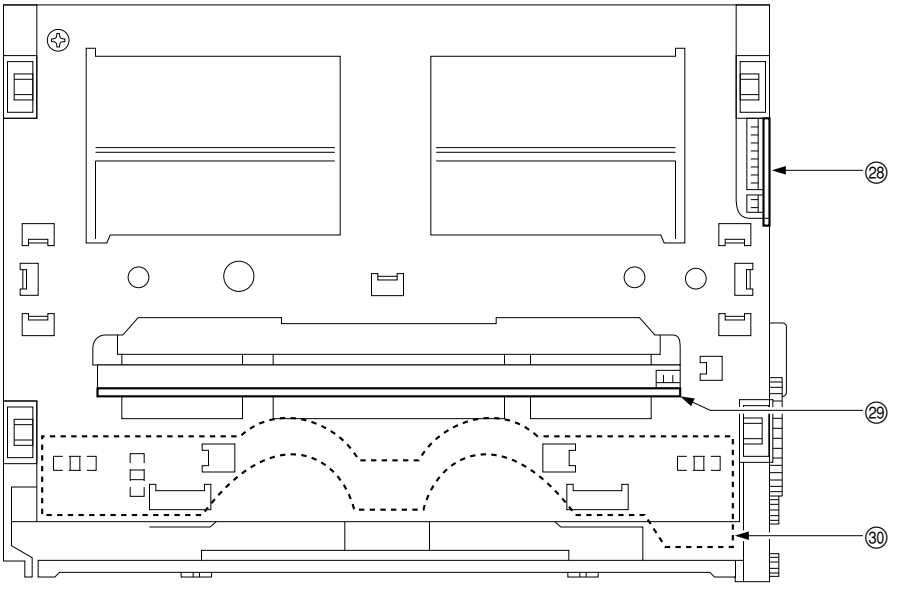
< Rear View >

Note

These figures are for DNW-A30.

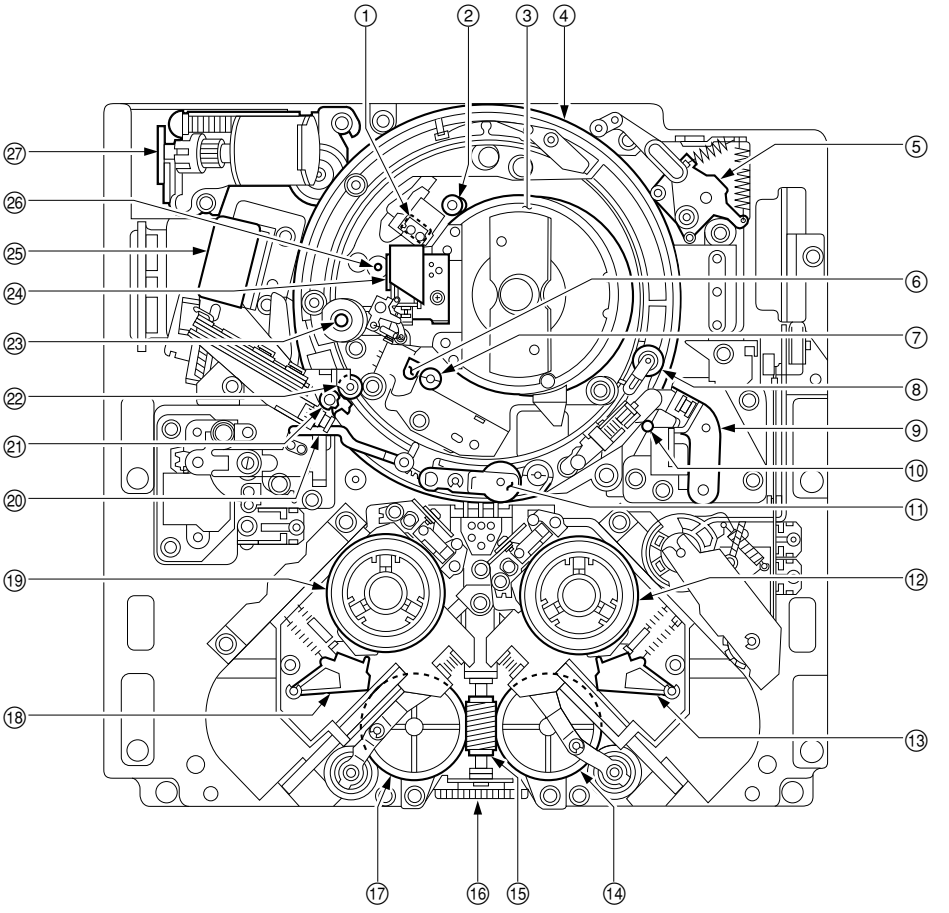


< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

2-8-2. Main Mechanical Parts Location

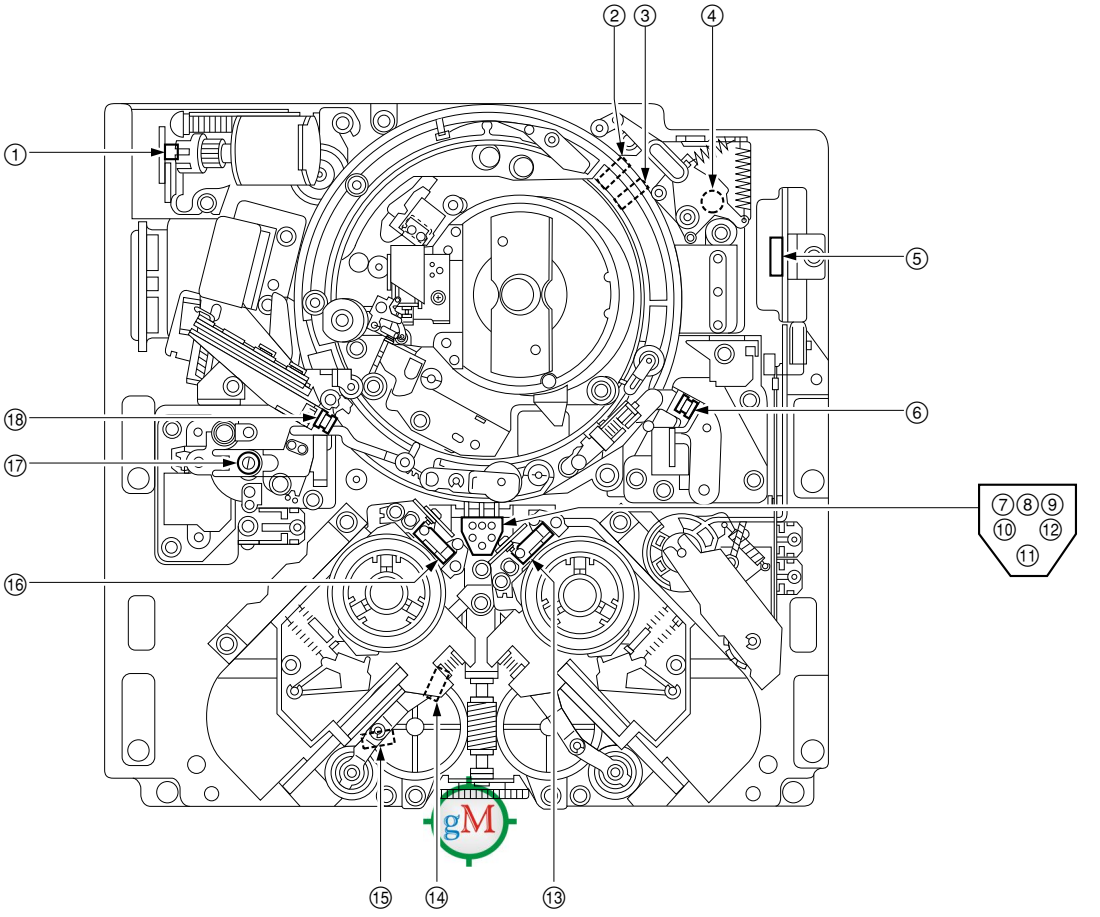


< Top View of Mechanical Deck >

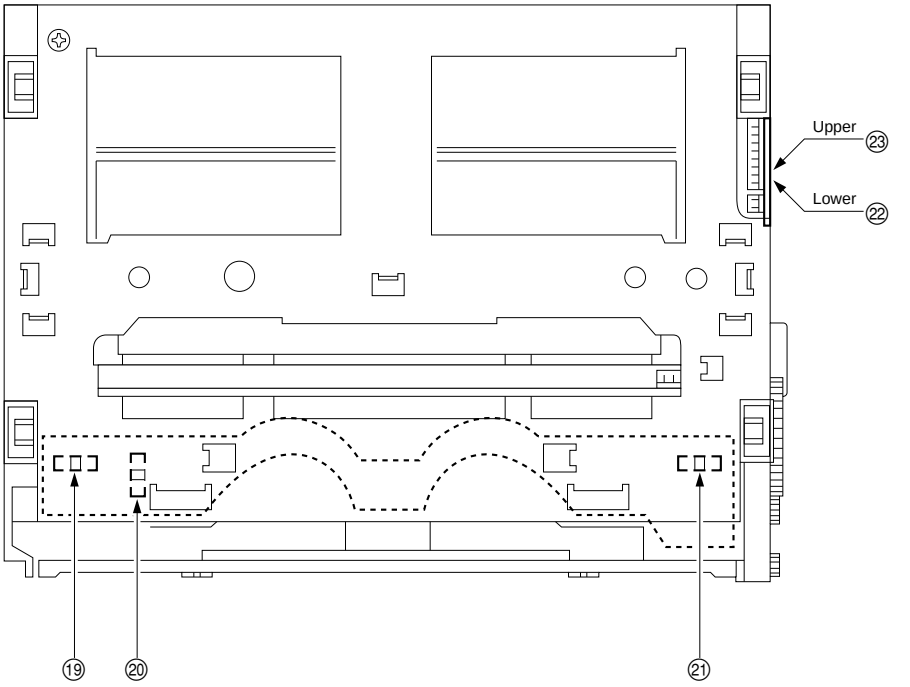
INDEX

① Audio/TC head
② TG-3 tape guide
③ Head drum
④ Threading ring
⑤ T tension regulator arm
⑥ CTL head
⑦ TG-2 tape guide
⑧ Audio/TC head cleaner
⑨ T drawer arm
⑩ TG-10 tape guide
⑪ Pinch roller
⑫ T reel table
⑬ T brake assembly
⑭ T worm wheel
⑮ Worm gear
⑯ Drive gear
⑰ S worm wheel
⑱ S brake assembly
⑲ S reel table
⑳ S tension regulator arm
㉑ Tape cleaner
㉒ TG-0 tape guide
㉓ Capstan shaft
㉔ Cleaning roller block
㉕ Pinch press block
㉖ TG-4 tape guide
㉗ Threading gear block

2-9. Function and Location of Sensors



< Top View of Mechanical Deck >



< Top View of Cassette Compartment >

① **Threading motor FG sensor**
This sensor detects the rotation speed of the threading motor.
The output signal of this sensor enters the threading/unthreading motor servo circuit, and controls the threading/unthreading speed to protect the tape damage during threading/unthreading operation.

② **Unthreading-end sensor**
③ **Threading-end sensor**
These sensors detect whether the threading ring reaches the threading-end or unthreading-end position.

④ **T tension regulator arm sensor**
This sensor detects the position of a T tension regulator arm.
During playback, the output signal of this sensor enters the T reel motor servo circuit, and controls the reel torque to keep a constant T tape tension.

⑤ **Condensation sensor**
This sensor detects whether the dew condensation occurs in the unit.

⑥ **Tape top sensor**
This sensor detects the beginning of the tape, and in addition detects the end of the tape that runs in the reverse direction.

⑦ **Reel hub diameter sensor**
This sensor detects the reel hub diameter detection tab of a cassette.
The reel hub with two types of diameters (thin and thick) is available according to the length of a tape stored in a cassette.
This sensor is used discriminate the diameter. The output signal of this sensor enters the servo circuit of take-up and supply reel motors, and controls the reel rotation speed and torque during tape transport.

⑧ **Metal/oxide tape sensor**
This sensor detects the metal tape detection tab of a Betacam/Betacam SP cassette.
This sensor is used to discriminate whether the tape stored in a Betacam/Betacam SP cassette is an oxide tape or metal particle tape.

⑨ **Tape thickness sensor**
This sensor detects the tape thickness detection tab of a cassette.
This sensor is used to discriminate the thickness of the tape stored in a cassette.

⑩⑪⑫ **Cassette classification sensors**
These sensors detect the three cassette type detection tabs of a cassette.
These sensors are used to discriminate whether a cassette can be used in this unit.

⑬ **T reel table FG sensor**
This sensor detects the rotation speed of the take-up reel motor.
The output signal of this sensor enters the motor servo circuit, and controls the reel table rotation speed.

⑭ **Reel S position sensor**
⑮ **Reel L position sensor**
These sensors detect whether the reel table moves to the correct position according to the size of the inserted cassette.

⑯ **S reel table FG sensor**
This sensor detects the rotation speed of the supply reel motor.
The output signal of this sensor enters the reel motor servo circuit, and controls the reel table rotation speed.

⑰ **S tension regulator arm sensor**
This sensor detects the position of an S tension regulator arm.
During playback, the output signal of this sensor enters the S reel motor servo circuit, and controls the reel torque to keep a constant S tape tension.

⑱ **Tape end sensor**
This sensor detects the end of the tape that runs in the forward direction.

⑲ **Cassette -in sensor (L)**
This sensor detects whether a cassette is being inserted.

⑳ **Cassette size sensor**
This sensor detects whether the inserted cassette is L size or S size.

㉑ **Cassette-in sensor (R)**
This sensor detects whether a cassette is being inserted.

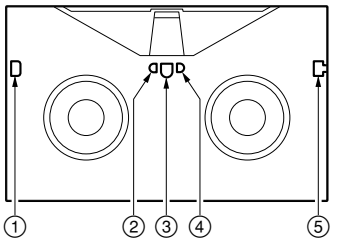
㉒ **Cassette-down (2) sensor**
㉓ **Cassette-down (1) sensor**
These sensors detect the movement (position) of a cassette compartment by the combination of the detection state of the two sensors and a cassette-in sensor.

2-10. System of Cassette

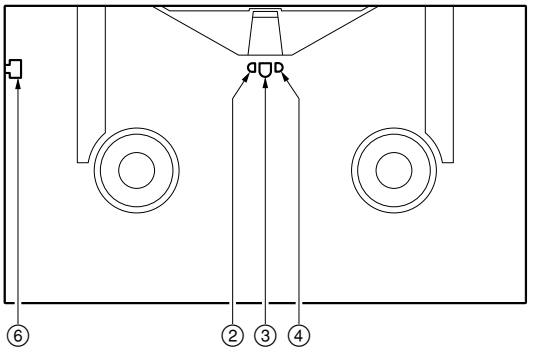
As shown in the figure below, plugs and tabs are provided at the back side of the cassette tape.

Cassette for Betacam or Betacam SP

Small cassette (S cassette)



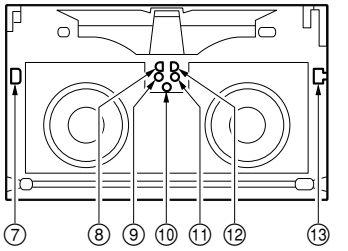
Large cassette (L cassette)



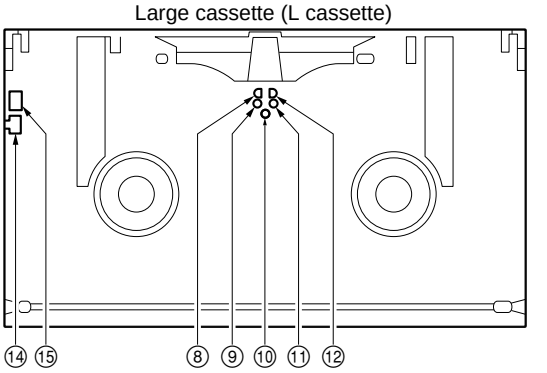
① S cassette REC inhibit tab (for oxide tape)
② Tape thickness detection tab
③ Metal tape detection tab
④ Reel hub diameter detection tab
⑤ S cassette REC inhibit plug (for metal particle tape)
⑥ L cassette REC inhibit plug

Cassette for Betacam SX

Small cassette (S cassette)



Large cassette (L cassette)



⑦ S cassette analog REC inhibit hole
⑧ Tape thickness detection tab
⑨⑩⑪ Cassette classification detection tabs
⑫ Reel hub diameter detection tab
⑬ S cassette digital REC inhibit tab
⑭ L cassette digital REC inhibit tab
⑮ L cassette analog REC inhibit hole

Detection Tabs

In cassette for Betacam or Betacam SP

No.	Use	With tab (Close hole)	Without tab (Open hole)
②	Tape thickness detection	Thick (Tape thick is 20 µm)	Thin (Tape thick is 15 µm)
③	Metal tape detection	Oxide tape	* Metal particle tape
④	Reel hub diameter detection	Small hub	Large hub

* : For the metal particle tape, digital recording can be performed using a Betacam SX format.

In cassette for Betacam SX

No.	Use	With tab (Close hole)	Without tab (Open hole)
⑧	Tape thickness detection	Tape thick is 14.5 µm	Tape thick is less than 14.5 µm
⑫	Reel hub diameter detection	Small hub	Large hub
⑨⑩⑪	Cassette classification detection	Without tab (open hole) at only ⑨ for Betacam SX cassette. Represents the cassette classification by combination of three tabs. (See below)	

Cassette classification detection tabs

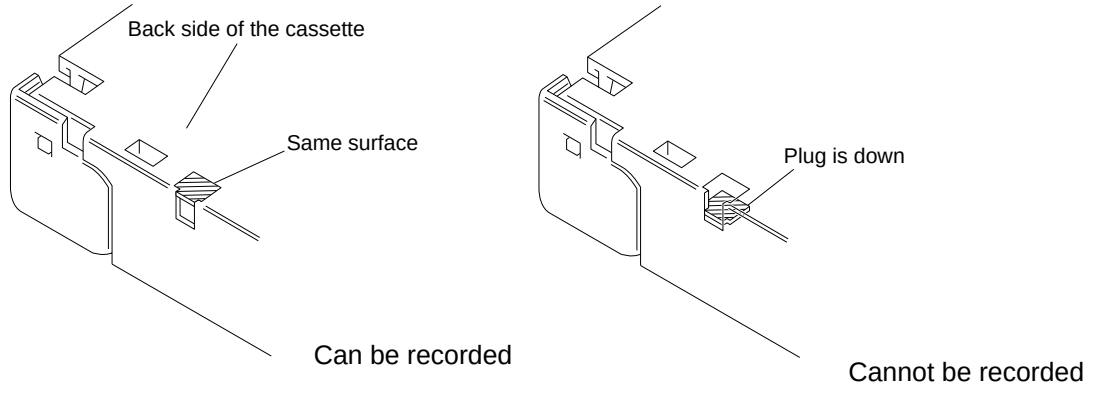
○ : with tab (close hole), ● : without tab (open hole)

State of tabs ⑨ ⑪ ⑩	Cassette class	Remake
○ ○	Betacam or Betacam SP	———
● ○	Betacam SX	———
○ ●	Digital Betacam	Unusable
● ○, ○ ●, ● ●, ○ ●, ● ●	Except the above class	Unusable

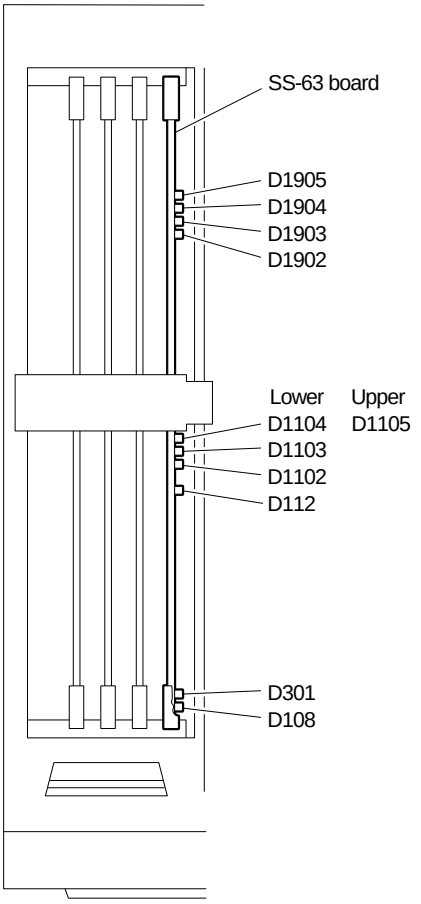
Note

REC inhibit plugs

(The REC inhibit plug is not detected since this unit is player.)



2-11. Information of LEDs on Circuit Boards



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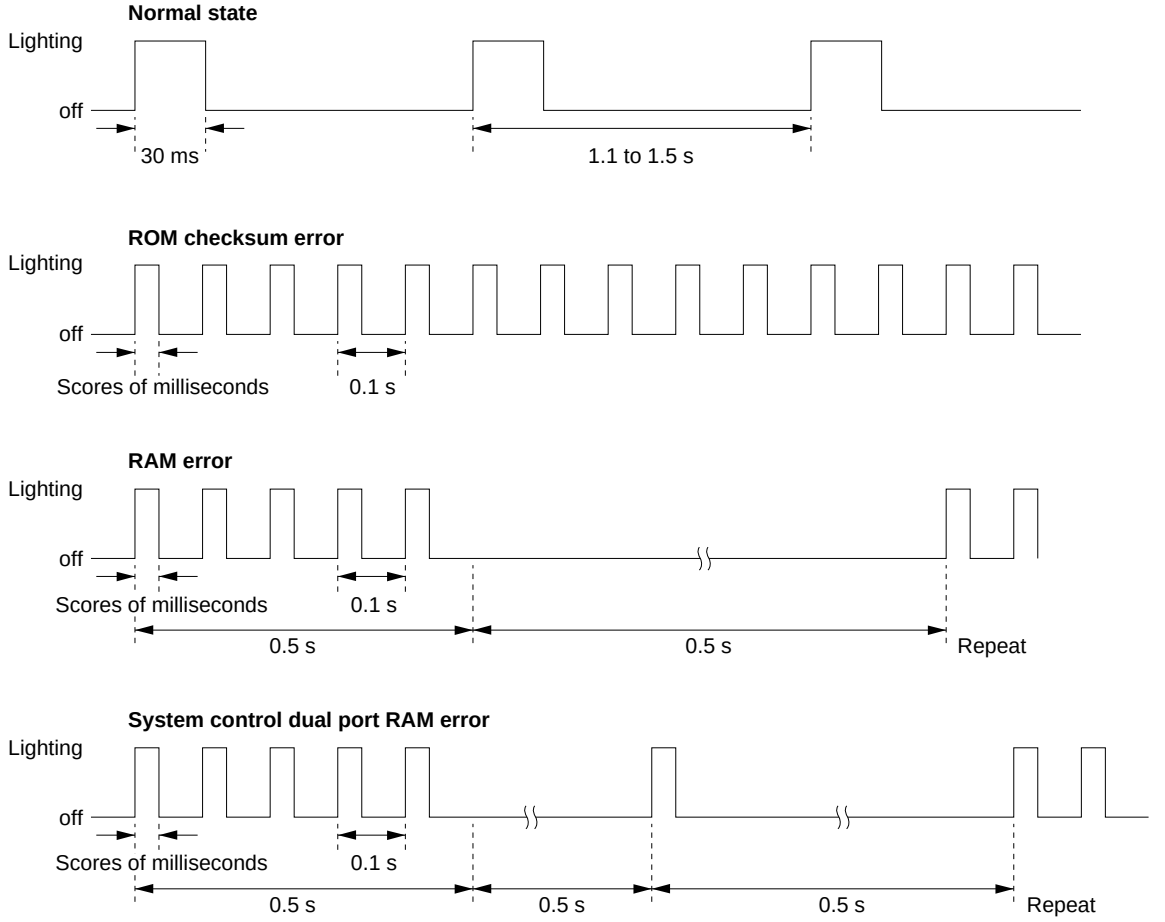
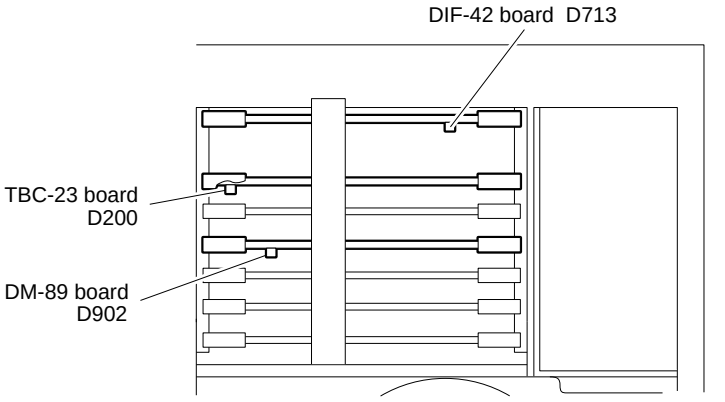
SS-63 board

LED No.	Name	Color	Description	Normal state
D108	SV	Amber	Represents the result of communication check to ROM and RAM after power on by blinking state.	Blinks
D112	TRVR	Amber	Lights when the tracking VR is enable.	Stays unlit
D301	DRUM	Amber	Blinks during the drum microcomputer (IC314 on SS-63 board) under normal operation. Usually lights for 30 ms at intervals of 1.1 to 1.5 s. The blinking interval is inverted when the drum is locked.	Blinks
D1102	SY1 STS1	Green	Blinks when SYS1 CPU operates normally.	Blinks
D1103	SY1 STS2	Green	Lights when between SYS1 and KEY PANEL (KY-364) communicates normally. Turn off when between SYS1 and KEY PANEL (KY-364) communicates abnormally.	Lights
D1104	MAINTE	Green	Lights during maintenance mode is performed.	Stays unlit
D1105	SY1 ERR	Red	Lights SYS1 CPU does not operate normally. Blinks when between SYS1 CPU and other CPU (SYS2 KY) commmunicates abnormally.	Stays unlit
D1902	SY2 STS1	Green	Blinks when SYS2 CPU operates normally.	Blinks
D1903	SY2 STS2	Green	Lights when between SYS2 and SV CPU communicates normally. Turn off when between SYS2 and SV CPU communicates abnormally.	Lights
D1904	SY2 STS3	Green	Lights when between SYS2 and SYS1 CPU communicates normally. Turn off when between SYS2 and SYS1 CPU communicates abnormally.	Lights
D1905	SY2 ERR	Red	Lights when SYS2 CPU does not operate normally. Blinks when between SYS2 CPU and other CPU (SYS1, SV) communicate abnormally.	Stays unlit

Blinking pattern of D108 on SS-63 board





DM-89 board (DNW-A30/A30P only)

LED No.	Name	Color	Description	Normal state
D902	ADJUST	Amber	Usually lights for scores of milliseconds at intervals of about 1 s. The blinking interval is inverted when the DM-89 board is in the adjustment mode: when switch S901-1 on DM-89 board is set to ON.	Blinks

TBC-23 board (DNW-A30/A30P only)

LED No.	Name	Color	Description	Normal state
D200	TBC	Amber	Lights once a second during TBC microcomputer (on TBC-23 board) operates under normal condition.	Blinks

DIF-42 board

LED No.	Name	Color	Description	Normal state
D713	VCO ADJ	Green	Lights when electronic volume (EVR) data comes near the proper value during VCO free-running adjustment in the maintenance mode.	Stays unlit

2-12. How to Take Out the Cassette when the Tape is Slacking

Note

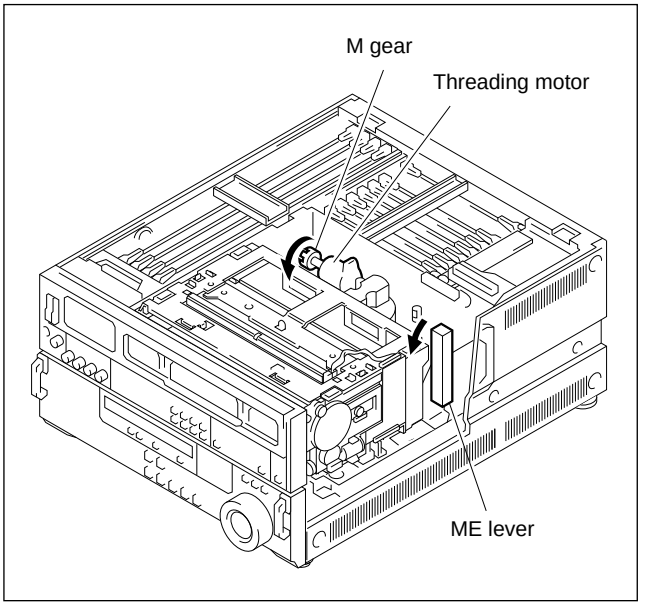
Turn off the power and unplug the power cord before starting the working.

When the tape is slacked in VTR, take out the cassette tape in the procedure below.

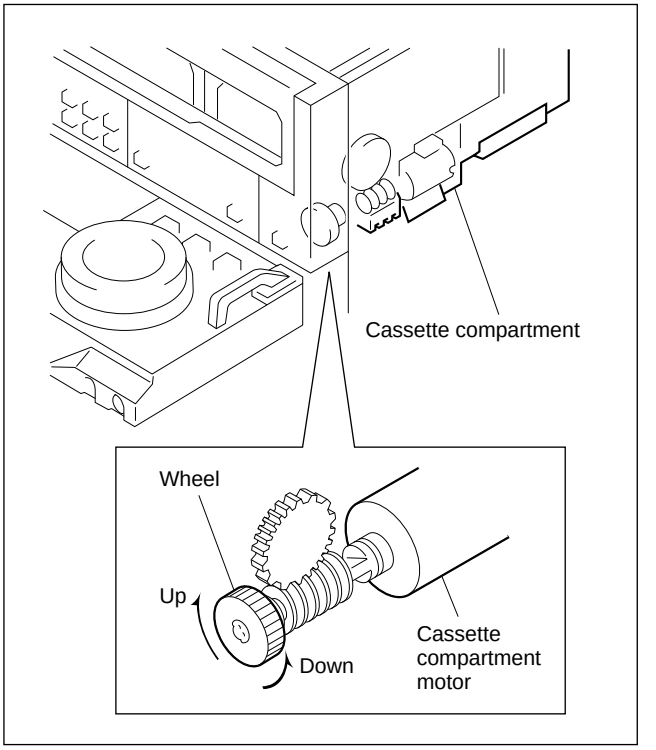
Note

The tape may be damaged. Take out the cassette tape with care.

1. Turn off the POWER switch.
2. Remove the upper lid.
   (Refer to "2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation".)
3. Remove the plate MD assembly.
   (Refer to "2-4. Plate MD Assembly removal/Installation".)
4. Rotate the M gear of the threading motor block in the direction of the arrow with fingers by about a half turn and slacken the tape.
5. Shift the ME lever toward the front panel side and wind the tape inside the cassette.



6. Repeat steps 4 and 5 until the tape is wound completely.
7. Take both side handles of a lower control panel and pull them slightly forward, then pull them more strongly. Then the lower control panel tilts upward (to 90 degrees position).
8. Turn the wheel of the cassette compartment motor show in the figure clockwise until the cassette is ejected completely.

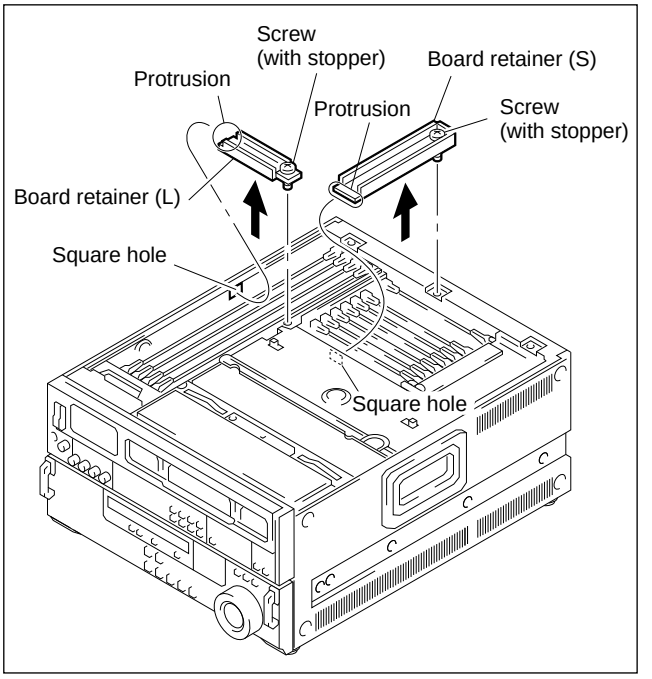


2-13. Pulling Out/Insertion of Plug-in Board

Notes

- Turn off the power and unplug the power cord before starting the removal/installation.
- When the plug-in board is replaced, refer to section 6 “Replacement of Plug-in Boards”.

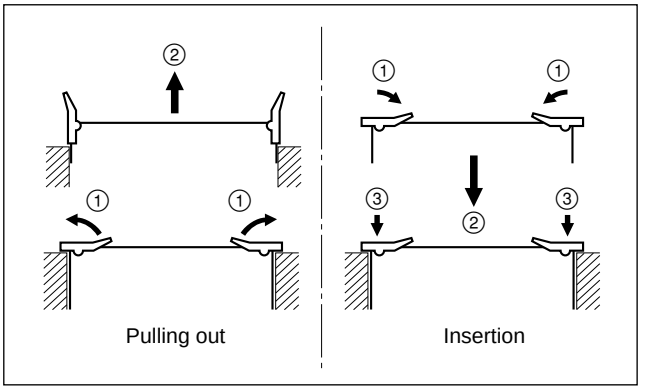
1. Remove the upper lid.
   (Refer to “2-3-1. Upper Lid, Side Panels, and Bottom Plate Removal/Installation”.)
2. Loosen a screw, and remove the board retainer (L) or (S).



3. To pull out the TBC-23 or TBC-24 board, disconnect the connected harness from the board to be removed.

   TBC-23 board : CN1
   TBC-24 board : CN1

4. Pull up the eject levers on the board to the direction of the arrows. (Disconnect it from motherboard.)
5. Hold the eject levers and pull out slowly the board.



6. To pull out the APR-12 or EQ-56 board, disconnect the connected harness from the board to be removed.

APR-12 board:	CN500 (A-1)	3P Red
	CN600 (G-1)	3P Yellow
EQ-56 board:	CN100 (B-7)	6P White
	CN500 (A-4)	4P White
	CN600 (G-4)	4P Red
	CN601 (G-5)	4P Yellow
	CN1500 (A-5)	4P Black

For insertion, perform in the reverse procedures of pulling out.

Notes

- After board insertion, push the two eject levers simultaneously and connect them firmly to the connector on the motherboard (MB-648 board).
- To install the board retainer, tighten the screw after insert the protrusion of the board retainer into the square hole of chassis.

2-14. Fixtures and Adjustment Equipments List

2-14-1. Equipments for Adjustment

It is recommended to use the equipments listed below or the equivalents.
Each equipment is available as a standard product.

Note

The equipment that is used only in the Maintenance Manual Part 2 is also described.

Equipment	Model name	Remarks
Analog composite signal generator	Tektronix 1410	(DNW-A30 only)
	Tektronix 1411	(DNW-A30P only)
Analog composite signal generator	Tektronix TSG-170A	(DNW-A30 only)
	Tektronix TSG-271A	(DNW-A30P only)
Spectrum analyzer	Advantest R3261A	With external trigger function bandwidth: more than 100 MHz
Oscilloscope	Tektronix 2465B	
Component/composite waveform monitor	Tektronix WFM300A	For measuring video levels
Serial digital component monitor	Tektronix WFM601i	
Waveform /vector monitor	Tektronix 1750 or 1780R	For measuring analog composite SC-H (DNW-A30/30 only)
	Tektronix 1751 or 1781R	For measuring analog composite SC-H (DNW-A30P/30P only)
Audio analyzer	Tektronix AA501A (OP.02)	For measuring distortion and levels
Audio level meter	Hewlett-Packard HP3400A	
Frequency counter	Advantest TR5821AK	
Digital voltmeter	Advantest TR6845	
Monitor with serial digital input	Sony BVM-1311 (with optional accessory BKM-2085-14)	(For 525/60 system)
	Sony BVM-1411P (with optional accessory BKM-2085-14)	(For 625/50 system)
Network analyzer	Anritsu MS-420B	

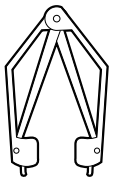
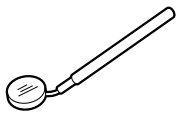
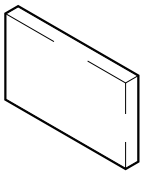
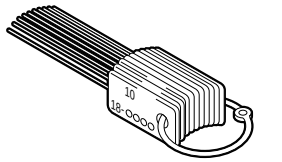
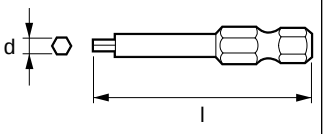
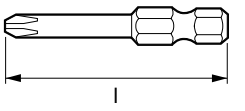
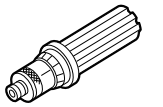
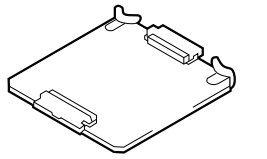
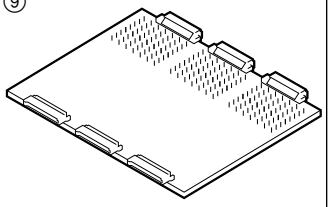
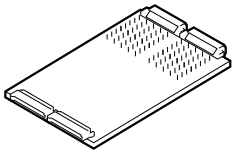
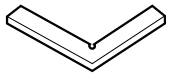
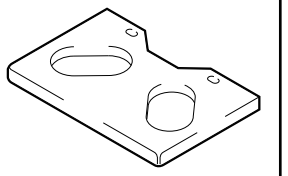
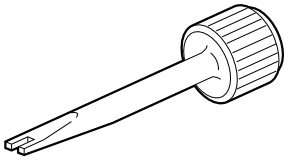
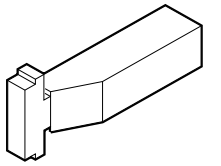
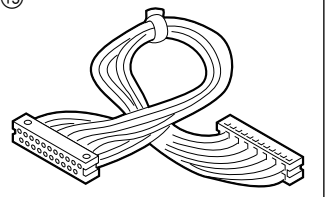
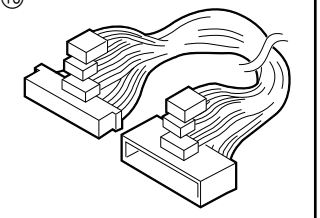
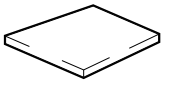
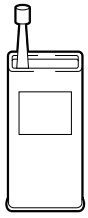
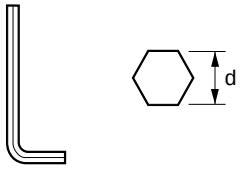
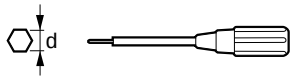
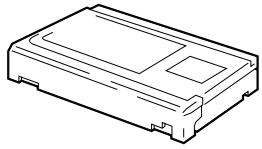
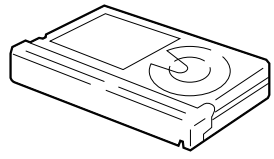
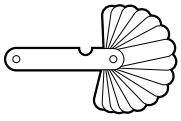
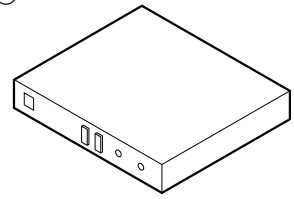
2-14-2. Fixtures

Note

The tools that are used only in the Maintenance Manual Part 2 are also described.

Fig. No.	Part No.	Description	[Inscription No.]	For use
1	J-6035-070-A	Extraction tool (for PLCC socket)	—	Extraction of IC (PLCC type)
2	J-6080-029-A	Small dental mirror (round type ø12)	—	Cassette pillar height adjustment
3	J-6086-570-A	Reference flat plate	[SL-657]	AT head zenith adjustment
4	J-6152-450-A	Wire clearance check gauge set	—	Clearance check
5	J-6251-090-A	Torque screwdriver's hexagonal bit (d=2.5 mm, l=120 mm)	—	Tightening screws to fix a drum assembly and upper drum asssembly
	J-6323-440-A	Torque screwdriver's hexagonal bit (d=0.89 mm, l=50 mm)	—	Tightening screws to fix a tension regulator roller
6	J-6323-420-A	Torque screwdriver's bit (+2 mm, l=75 mm)	—	Tightening screws to fix a brush/slip ring assembly
	J-6323-430-A	Torque screwdriver's bit (+3 mm, l=50 mm)	—	Tightening screws to fix a reel motor assembly or a ring roller
7	J-6252-510-A	Torque screwdriver (6 kg • cm)(0.6 N • m)	[JB-5251]	Tightening screws
	J-6252-520-A	Torque screwdriver (12 kg • m)(1.2 N • m)	[JB-5252]	Tightening screws
8	*1 J-6269-810-A	Extension board (S), EX-377	—	Extension of the small-sized plug-in board (DM, TBC)
9	A-8277-211-A	Extension board (L), EX-555	—	Extension of the large-sized plug-in board
10	A-8277-212-A	Extension board (S), EX-556	—	Extension of the small-sized plug-in board (EQ, APR)
11	J-6320-870-A	Reel motor shaft slantness check fixture	[MW-087]	Reel motor shaft slantness adjustment
12	J-6320-880-A	Cassette reference plate (L)	[MW-088]	Reel table height adjustment, Reel motor shaft slantness adjustment
13	J-6322-610-A	Tape guide adjustment driver	[MW-261]	Tape path adjustment
14	J-6329-350-A	Reel table height gauge	[MW-935]	Reel table height adjustment
15	*1 1-952-684-11	Extension cable (14P)	—	Extension of the TBC-23 or TBC-24 board
16	1-957-071-11	Extension cable set	—	Extension of the power supply unit
17	3-184-527-01	Cleaning cloth (15 cm × 15 cm)	—	Cleaning
18	7-432-114-11	Looking compound (200 g)	—	Inhibits loosening of screws
19	7-661-018-18	Diamond oil NT-68 (50 ml)	—	
20	7-651-000-10	Sony grease SGL-601 (50 g)	—	
21	7-700-736-01	L-shaped hexagonal wrench (d=1.27 mm)	—	
	7-700-736-05	L-shaped hexagonal wrench (d=1.5 mm)	—	
	7-700-736-06	L-shaped hexagonal wrench (d=0.89 mm)	—	
22	7-700-766-04	Hexagonal wrench driver (d=2.5 mm)	—	
23	8-960-075-01	Alignment tape, SR5-1	—	Video/audio adjustments (for 525/60 system)
	8-960-075-11	Alignment tape, SR2-1	—	Servo adjustment (for 525/60 system)
	8-960-075-51	Alignment tape, SR5-1P	—	Video/audio adjustments (for 625/50 system)
	8-960-075-61	Alignment tape, SR2-1P	—	Servo adjustment (for 625/50 system)
24	*2 8-960-096-01	Alignment tape, CR2-1B	—	Tracking adjustment (for analog NTSC)
	*2 8-960-096-41	Alignment tape, CR5-1B (metal particle tape)	—	Video adjustment (for analog NTSC)
	*3 8-960-096-51	Alignment tape, CR2-1B PS	—	Tracking adjustment (for analog PAL)
	*2 8-960-097-44	Alignment tape, CR5-2A (oxide tape)	—	Betacam video adjustment (for analog NTSC)
	*2 8-960-097-45	Alignment tape, CR8-1A (oxide tape)	—	Betacam audio adjustment (for analog NTSC)
	*3 8-960-096-91	Alignment tape, CR5-1B PS (metal particle tape)	—	Video adjustment (for analog PAL)
	*3 8-960-096-86	Alignment tape, CR8-1B PS (metal particle tape)	—	Audio adjustment (for analog PAL)
	*3 8-960-098-44	Alignment tape, CR5-2A PS (oxide tape)	—	Video adjustment (for analog PAL)
	*3 8-960-098-45	Alignment tape, CR8-1A PS (oxide tape)	—	Audio adjustment (for analog PAL)
25	9-911-053-00	Thickness gauge	—	Clearance check
26	9-919-573-01	Cleaning liquid	—	Cleaning
27	*4 J-6332-240-A	VISC phase adjusting tool	—	VISC adjustment for PAL system

*1: DNW-A30/A30P only
*2: DNW-A30 only
*3: DNW-A30P only
*4: DNW-A30P/30P only

① 	② 	③ 	④ 
⑤ 	⑥ 	⑦ 	⑧ 
⑨ 	⑩ 	⑪ 	⑫ 
⑬ 	⑭ 	⑮ 	⑯ 
⑰ 	⑱ 	⑲	⑳
㉑ 	㉒ 	㉓ 	㉔ 
㉕ 	㉖	㉗ 	

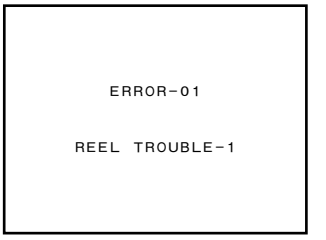
Section 3
Error Message

3-1. Error Message

This unit has self-diagnostics function.
When trouble is detected, an ALARM indicator is lighted immediately on the lower control panel, and an error message and error code are displayed in the time data display area and event display area.

Note

When the error code 90 is detected, an error message is only displayed, but error code is not displayed, and the ALARM indicator is not lighted.

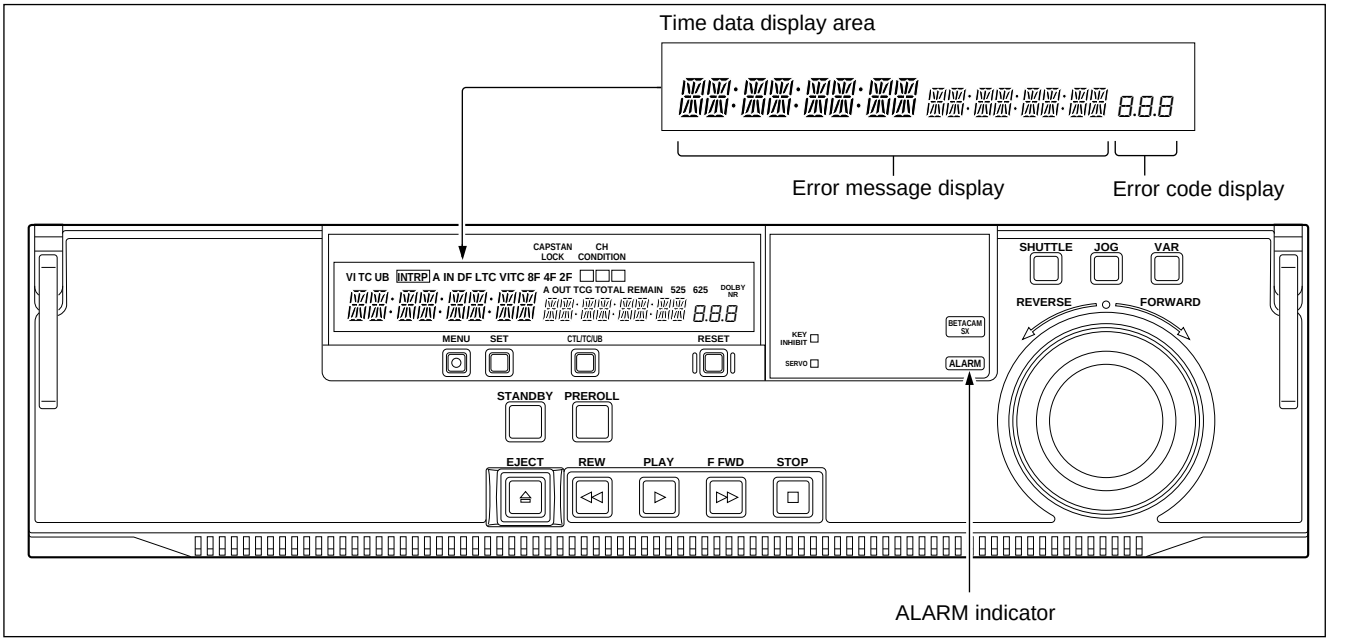


Ex. Superimposed on Video Monitor

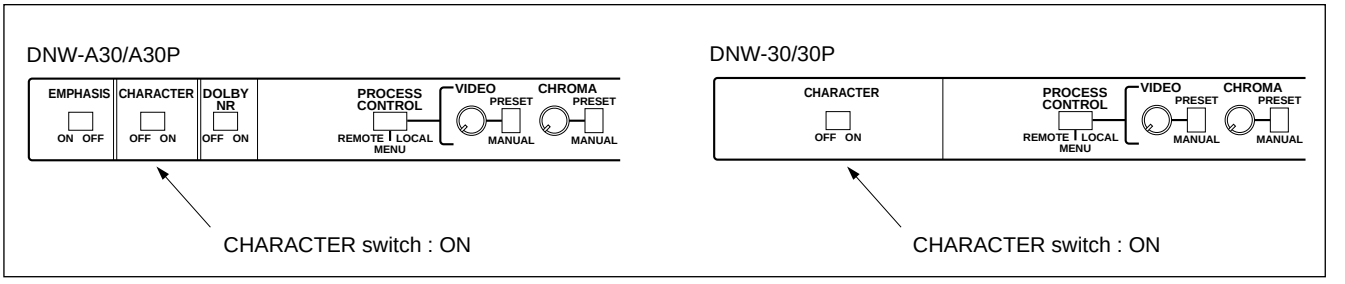
Also, an error code and error message are superimposed on the video monitor connected to the VIDEO OUTPUT COMPOSITE 3 connector. Furthermore, as for the error code 92, 93, and 96, object which error occurred is displayed as sub error message on the video monitor.

Note

To superimpose the error message and code on the video monitor, the CHARACTER switch on the sub control panel must be set to ON.
But when the error code 90 is detected, error message and code are not superimposed on the video monitor.



Error Message/Code Display Area and ALARM Indicator



CHARACTER Switch on Sub Control Panel

Error messages are described in the order of error codes on the next page and later.

If multiple errors occur, the priority level of the error code display are as follows: 92, 93, 96, 91, 97, 98, 02, 03, 04, 05, 07, 06, 01, 09, 08, 0A, 10, 11, 12, 13, 20, 21, 22 , and 23

The “protection mode” described in this text means the servo control system automatically stops the tape transport and drum motor rotation, and maintains this state. The unit cannot be automatically recovered to the normal state when the unit once enters the protection mode. When the protection mode is entered with the cassette tape inserted, take out the cassette tape manually with reference to “2-12. How to Take Out the Cassette when the Tape is Slacking”. Never turn the power on again without taking out the cassette tape. This may damage the tape.

Error List

Code	Message on time data display area	Page	Description
01	REEL TROUBLE	3-3	Tape slacking is detected in the threading or unthreading operation.
02	REEL TROUBLE	3-4	Tape slacking or tape breaking is detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	3-5	Tape slacking, tape breaking, or supply or take-up reel locking is detected in the PLAY mode.
04	REEL TROUBLE	3-6	An malfunctional tape transport speed is detected in the FF or REW mode.
05	REEL TROUBLE	3-6	The malfunctional operation of the supply or take-up reel is detected during cassette insertion.
06	TAPE TENSION	3-7	Excessive tape tension is detected in the PLAY mode.
07	CAPSTAN TROUBLE	3-7	Malfunction of capstan motor is detected.
08	DRUM TROUBLE	3-8	Malfunction of drum motor is detected.
09	TH/UNTH MOTOR	3-8	Malfunction of threading or unthreading operation is detected.
0A	THREADING TROUBLE	3-9	It is detected that the tape top processing is not completed in the threading mode.
10	HUMID	3-9	Dew condensation is detected.
11	TAPE T/E SENSOR	3-10	The tape top and tape end are detected simultaneously.
12	TAPE TOP SENSOR	3-10	Malfunction of tape top sensor is detected.
13	TAPE END SENSOR	3-11	Malfunction of tape end sensor is detected.
14	FAN MOTOR	3-12	Malfunction of cooling fan motor is detected.
20	CASS COMP MOTOR	3-13	Malfunction of cassette compartment-up or down operation is detected.
21	REEL SFT MOTOR	3-13	Malfunction of movement of the reel table corresponding to the cassette size is detected.
22	REEL POS SENSOR	3-14	The L-cassette and S-cassette positions of the reel table are detected simultaneously.
23	THREAD RING SENS	3-14	The thread end and unthread end states of the threading ring are detected simultaneously.
90	NO COMMUNICATION	3-15	Abnormality is detected in the communication between control panel (KY-364 board) and SIO.
91	SYSTEM REFERENCE	3-15	Abnormality is detected in a system reference signal (VD).
92	INTERNAL I/F	∗	Abnormality is detected in the interface between SS-63 board and other boards.
93	CPU INITIALIZE	∗	Abnormality is detected during the servo system initialization at turn on the power state.
96	SY NVRAM	∗	The abnormal operation of an NV-RAM (Non-volatile RAM) (SS-63 board) in system control system is detected.
97	SV NVRAM	∗	The abnormal operation of an NV-RAM (MS-50 board) in servo system is detected.
98	RF NVRAM	∗	The abnormal operation of an NV-RAM (EQ-56 board) in RF system is detected.

∗ : Be not described.

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Details of error messages

Following are details of error messages.

Note

The messages on time data display area differ from the messages which are superimposed on the video monitor.

Ex. : ERROR-23 TH/UNTH END SENSOR TROUBLE
(THREAD RING SENS)

Message on time data display area

Message superimposed on video monitor

ERROR-01 REEL TROUBLE-1 (REEL TROUBLE)

Description: Tape slacking was detected during threading or unthreading.

Detecting conditions:
1) When no take-up reel FG can be detected in the unthread operation just after activation
2) When the relation between the take-up reel FG and threading FG is out of the specification in operations other than unthread just after activation

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of take-up reel FG detection block
- Take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Take-up reel motor trouble
- Take-up reel motor drive circuit (DR-315 board) trouble
- Take-up reel brake trouble
- Take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Servo adjustment defect on take-up reel
- Harness disconnection
- Take-up reel table height adjustment defect

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to section 2-12). Never turn the power on again without taking out the cassette. This may damage the tape.

ERROR-02 REEL TROUBLE-2 (REEL TROUBLE)

Description: Tape slacking or tape breaking was detected in SEARCH, FF, or REW mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value
2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-50 board) trouble
- Take-up torque insufficiency during REW due to supply tension sensor or supply tension detect circuit (MS-50 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode. The normal state may be returned after the protection mode is entered at the end of the tape.

CAUTION

Be sure to take out the cassette manually (refer to section 2-12). Never turn on the power again without taking out the cassette. This may damage the tape.

ERROR-03 REEL TROUBLE-3 (REEL TROUBLE)

Description: Tape slacking, tape breaking, or supply or take-up reel locking was detected in the PLAY mode.

Detecting conditions:
1) When the take-up value is lower than the specified value with respect to the tape supply value
2) When the relation among the capstan FG, supply reel FG, and take-up reel FG are out of the specification
3) When the supply reel and take-up reel do not coincide in rotation direction continuously for more than five seconds
4) When the tension value calculated from the supply tension sensor output is less than 15 g continuously for more than three seconds

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Capstan motor trouble
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan FG waveform shaper circuit (MS-50 board) trouble
- Servo adjustment defect on capstan, reel(s), and supply tension sensor
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Enters the protection mode.

CAUTION

Be sure to take out the cassette manually (refer to section 2-12). Never turn on the power again without taking out the cassette. This may damage the tape.

ERROR-04 REEL TROUBLE-4 (REEL TROUBLE)

Description: Abnormal tape transport speed was detected in the FF or REW mode.

Detecting condition: When the tape speed calculated from the supply reel FG and take-up reel FG is under a half of the specified tape speed continuously for more than four seconds

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ✻ The reel did not rotate because the cassette was lifted-up from the specified position.
- Clearance adjustment defect of supply or take-up reel FG detection block
- Supply or take-up reel motor trouble
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection
- Reel table height adjustment defect
- Tape path and drum troubles
- Tape abnormality (The winding state has a problem.)

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-05 REEL TROUBLE-5 (REEL TROUBLE)

Description: Abnormal supply reel or take-up reel operation was detected in a diagnosis during cassette insertion.

Detecting conditions:
1) When the supply reel FG or take-up reel FG count is less than the specified value with the reel rotated
2) When the supply reel FG or take-up reel FG count is more than the specified value with the reel stopped

Sub error message: None

Possible causes:
- Supply or take-up reel FG sensor (SE-344 board) trouble or clearance adjustment defect
- Supply or take-up reel FG waveform shaper circuit (MS-50 board) trouble
- Supply or take-up reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply or take-up reel
- Supply or take-up reel brake trouble
- Supply or take-up reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection

Protecting operation: Ejects the cassette.

ERROR-06 TAPE TENSION ERROR (TAPE TENSION)

Description: Excessive tension was detected in the PLAY mode.

Detecting condition: When the tension value calculated from supply tension sensor output is more than 55 g continuously for more than three seconds

Sub error message: None

Possible causes:
- Cassette compartment trouble or installation defect
  ∗ The reel did not rotate because the cassette was lifted-up from the specified position.
- Supply tension sensor or its related circuit (MS-50 board) trouble
- Supply reel motor trouble
- Supply reel motor drive circuit (DR-315 board) trouble
- Servo adjustment defect on supply reel and supply tension sensor
- Supply reel brake trouble
- Supply reel brake solenoid drive circuit (MS-50 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state.

ERROR-07 CAPSTAN TROUBLE (CAPSTAN TROUBLE)

Description: Malfunction of capstan motor was detected.

Detecting conditions:
1) When the capstan FG count is less than the specified value in a diagnosis during cassette insertion
2) When the frequency calculated from the capstan FG is out of the specification in the PLAY, or SEARCH mode
3) When CAPSTAN FG(A) NOR signal and CAPSTAN FG(B) NOR signal interruption are not normal for about 40 ms in the PLAY mode

Sub error message: None

Possible causes:
- Capstan motor trouble
- FG sensor trouble in capstan motor
- Capstan motor drive circuit (DR-315 board) trouble
- Capstan motor FG waveform shaper circuit (MS-50 board) trouble
- Capstan FG duty adjustment defect

Protecting operations: Ejects the cassette for No. 1 in detecting conditions.
Stops the tape transport and enters the rest state for No. 2 and No. 3 in detecting conditions.

ERROR-08 DRUM MOTOR TROUBLE (DRUM TROUBLE)

Description: Malfunction of drum motor was detected.

Detecting condition: When the drum FG cycle is shifted more than about ±30 % continuously for more than 10 seconds as compared with during normal rotation

Sub error message: None

Possible causes:
- Drum motor trouble
- Drum microcomputer (IC314 on SS-63 board) trouble
- Drum motor drive circuit (DR-315 board) trouble
- Drum FG/PG waveform shaper circuit (DR-315 board) trouble
- Assembly defect during upper drum replacement

Protecting operation: Stops the tape transport and enters the rest state in the unthread end state.

ERROR-09 TH/UNTH MOTOR LOCK (TH/UNTH MOTOR)

Description: Malfunction of threading or unthreading operation was detected.

Detecting conditions:
1) When no operation is completed within about six seconds after operation start
2) When no threading FG is output within about 0.4 second during threading motor drive
3) When states other than unthread end are continued for more than six seconds in case that the unit should be in the unthread end state

Sub error message: None

Possible causes:
- Unthread end sensor (TR-79 board) trouble
- Thread end sensor (TR-79 board) trouble
- Thread end/unthread end input port (IC1 on MS-50 board) trouble
- Threading motor trouble
- Threading FG sensor (PTC-54 board) trouble
- Threading FG waveform shaper circuit (MS-50 board) trouble
- Threading motor drive circuit (DR-315 board) trouble
- Threading mechanism trouble

Protecting operations: Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-0A THREADING TROUBLE (THREADING TROUBLE)

Description: It was detected that the tape top processing in the thread state is not completed.

Detecting condition: When the tape top is detected again after it is processed

Tape top processing

In this processing, the tape is slightly forwarded without taking out the tape after unthread because the tape top was detected during threading.
(Short FF)

Sub error message: None

Possible causes:
- Take-up reel motor trouble
- Servo adjustment defect on take-up reel
- Take-up reel motor drive circuit (DR-315 board) trouble
- Tape top sensor trouble
- Tape top detection circuit (MS-50 board) trouble
- Tape top input port (IC115 on SS-63 board) trouble
- Tape abnormality

Protecting operation: Enters the rest state in the unthread end state.

ERROR-10 HUMID (HUMID)

Description: Dew condensation was detected.

Detecting condition: When the condensation sensor detects dew condensation continuously for about two seconds

Sub error message: None

Possible causes:
- Actual dew detection (When the operating environment rapidly changes from low temperature to high temperature and high humidity)
- Condensation sensor trouble
- Dew input port (IC1 on MS-50 board) trouble

Protecting operations: Prohibits the cleaning roller operation.
Stops the tape transport and enters the rest state in the unthread end state when the tape is threaded in states other than PLAY.
Prohibits the tape threading.
Prohibits the cassette insertion.

ERROR-11 TAPE TOP/END SENSOR TROUBLE (TAPE T/E SENSOR)

Description: The tape top and tape end were detected simultaneously.

Detectiong condition: When the simultaneous detection of the tape end and tape top is continued for more than seven seconds

Sub error message: None

Possible causes:
- Tape top sensor or tape end sensor trouble
- Tape top or tape end detection circuit (MS-50 board) trouble
- Tape top/tape end input port (IC115 on SS-63 board) trouble
- Harness disconnection

Protecting operation: Stops the tape transport and enters the rest state during tape transport.

ERROR-12 TAPE TOP SENSOR TROUBLE (TAPE TOP SENSOR)

Description: Malfunction of tape top sensor was detected.

Detecting condition: When the tape top is detected continuously for more than seven seconds

Sub error message: None

Possible causes:
- Tape top sensor trouble
- Tape top detection circuit (MS-50 board) trouble
- Tape top input port (IC115 on SS-63 board) trouble
- Harness disconnection
- The tape cannot move at the tape top due to troubles other than the tape sensor.

Protecting operations: In the FF mode, continues the operation until the tape end is detected. Stops the tape transport and enters the rest state when the tape end is detected.
During tape transport in forward direction, the FF mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

ERROR-13 TAPE END SENSOR TROUBLE (TAPE END SENSOR)

Description: Malfunction of tape end sensor was detected.

Detecting condition: When the tape end is detected continuously for more than seven seconds

Sub error message: None

Possible causes:
- Tape end sensor trouble
- Tape end detection circuit (MS-50 board) trouble
- Tape end input port (IC115 on SS-63 board) trouble
- Harness disconnection
- The tape cannot move at the tape end due to troubles other than the tape sensor.

Protecting operations: In the REW mode, continues the operation until the tape top is detected. Stops the tape transport and enters the rest state when the tape top is detected.
During the tape transport in reverse direction, the REW mode can be entered only while the total tape quantity is observed.
Stops the tape transport and enters the rest state during tape transport except the above.

ERROR-14 FAN MOTOR TROUBLE (FAN MOTOR)

Description: Malfunction of cooling fan motor was detected.

CAUTION

If this error occurred, stop immediately operation of the unit, and turn off the power.
If the unit uses continuously under the fan is stopped state, overhearting inside the unit can cause a fire or a failure.

Detecting condition: When the fan motor FG frequency is less than the specified value continuously for more than one second

Sub error message: None

Possible causes:
- Fan motor trouble
- Fan motor FG input port (IC115 or IC500 on SS-63 board) trouble
- Fan motor control port (IC500 on SS-63 board) trouble
- Fan motor power switch circuit (MB-648 board) trouble

Protecting operation: None

Note

This unit has four fan motors.
When the above detecting condition is satisfied by any fan motor, this error occurs.
Relations of fan motors and operation state, ports, power switch circuit are as follows.

Use	Operation sate	FG input port	Control port	Power switch circuit
For rear	Always rotating	IC500/SS-63 board	None	None
For EQ-56 board	Always rotating	IC500/SS-63 board	IC500/SS-63 board	Q4 and Q5/MB-648 board
For mechanical deck	Always rotating	IC115/SS-63 board	IC500/SS-63 board	Q1 and Q2/MB-648 board
For power supply unit	Always rotating	IC115/SS-63 board	None	None

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ERROR-20 CASSETTE COMPARTMENT MOTOR LOCK (CASS COMP MOTOR)

Description: Malfunction of cassette compartment-up or down operation was detected.

Detectiong condition: When no operation is completed within about six seconds after operation start

Sub error message: None

Possible causes:
- Cassette compartment block trouble
- Cassette compartment motor drive circuit (DR-315 board) trouble
- Cassette-down sensor (CL-29 board) trouble
- Cassette-down input port (IC1 on MS-50 board) trouble

Protecting operation: Stops the movement of the cassette compartment and reel table until a cassette eject button is pushed.

ERROR-21 REEL SHIFT MOTOR LOCK (REEL SFT MOTOR)

Description: Malfunction of movement of the reel table corresponding to the cassette size was detected.

Detecting condition: When no operation is completed within about six seconds after operation start

Sub error message: None

Possible causes:
- Reel shift mechanism trouble
- Reel shift motor trouble
- Reel shift motor drive circuit (DR-315 board) trouble
- Reel position sensor (PTC-71 board) trouble (S position sensor or L position sensor)
- Reel position input port (IC1 on MS-50 board) trouble

Protecting operation: Stops the movement of the reel table and ejects the cassette during cassette loading.

ERROR-22 REEL POSITION SENSOR TROUBLE (REEL POS SENSOR)

Description: The L and S cassette positions of the reel table were detected simultaneously.

Detecting condition: When the L and S position sensors detect the L and S cassette positions, respectively at the same time

Sub error message: None

Possible causes:
- S position sensor (PTC-71 board) trouble
- L position sensor (PTC-71 board) trouble
- Reel position input port (IC1 on MS-50 board) trouble

Protecting operation: If possible, ejects the cassette, when an error occurs during cassette insertion.
Prohibits the cassette insertion.

ERROR-23 TH/UNTH END SENSOR TROUBLE (THREAD RING SENS)

Description: The thread end and unthread end states were detected simultaneously.

Detecting condition: When the thread end and unthread end sensors detect the thread end and unthread end states, respectively at the same time

Sub error message: None

Possible causes:
- Thread end sensor (TR-79 board) trouble
- Unthread end sensor (TR-79 board) trouble
- Thread end or unthread end input port (IC1 on MS-50 board) trouble

Protecting operations: Ejects the cassette during cassette insertion or ejection.
Enters the protection mode during tape threading/unthreading.
Stops the tape transport and enters the rest state in cases except the above.

ERROR-90 KEYBOARD INTERFACE ERROR (NO COMMUNICATION)

Note

This error message is displayed in the time data display area, but error code is not displayed. The error message is not superimposed to the video monitor, and ALARM indicator does not light.

Description: The communication between the lower control panel (KY-364 board) and SIO (IC1102 on SS-63 board) is not normal.

Detecting condition: The microcomputer (IC104 on KY-364 board) on the lower control panel cannot receive transmit signal from SIO

Sub error message: None

Possible causes:
- Cable connection defect or disconnection
- Line receiver/transceiver (IC102 on KY-364 board) trouble
- SIO (IC1102 on SS-63 board) trouble

Protecting operation: None

ERROR-91 SYSTEM REFERENCE NOT EXIST (SYSTEM REFERENCE)

Description: Abnormality was detected in the system reference signal (VD).

Detecting condition: When the VD signal is not input to IC1903 on SS-63 board for more than a fixed time period

Sub error message: None

Possible causes:
- Servo IC (IC313 on SS-63 board) trouble
- Servo CPU (IC103 on SS-63 board) trouble

Protecting operation: Enters the protection mode when abnormality is detected by the servo system (Servo CPU).
Only displays this error when abnormality is detected by only the system control system.

Section 5
Periodic Maintenance and Inspection

This section explains about periodic maintenance and how to clean.

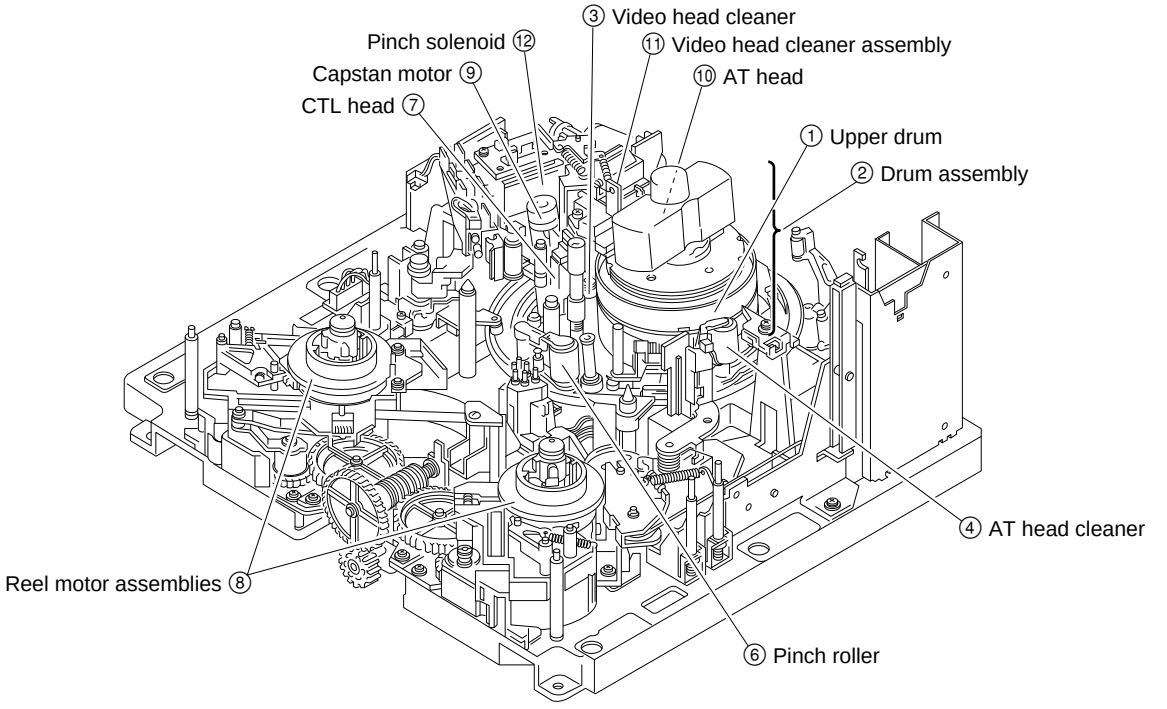
5-1. Periodic Maintenance

To make the most of the functions, fully realize the performances of this unit and to lengthen the life of the unit, periodic check and parts replacement are recommended.

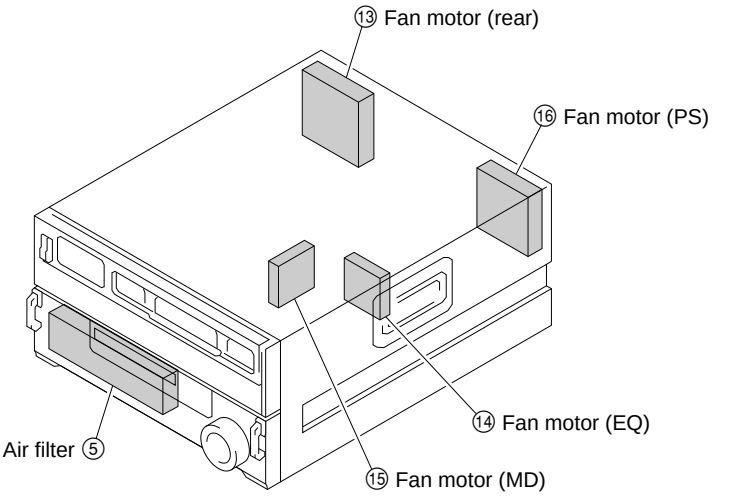
5-1-1. Index

It is necessary to check and replace periodically to the following parts.
The numbers in the illustration correspond to the table in the next page.

< Mechanical Deck Block >



< Chassis>



5-1-2. Periodic Replacement and Check Item Table

The replacement time shown in the following table is not the guarantee term of parts. The replacement time of parts varies depending on the operating environment and conditions of the unit.
Especially, the pinch roller, cleaners and air filter may be required replacing earlier than replacement period shown in table depending on their dirt or abrasion.

No.	Replacement parts	Replacement period	Part No.	Name	Q'ty	Note
1	Upper drum	Every 2,000 hours of drum rotating	A-8313-974-A	Upper drum DJR-19A-R	1	DNW-A30/A30P
			A-8313-972-A	Upper drum DJR-18A-R	1	DNW-30/30P
2	Drum assembly *1	Every 6,000 hours of drum rotating	A-8313-973-A	Drum DJH-19A-R	1	DNW-A30/A30P
			A-8313-971-A	Drum DJH-18A-R	1	DNW-30/30P
3	Video head cleaner	Every 2,000 hours of drum rotating	X-3167-281-3	Roller assy, V cleaning	1	Check every 1,000 hours
			3-182-765-02	CR spacer	1	
4	AT head cleaner	Every 2,000 hours of drum rotation	X-3167-053-2	Arm assy, CL	1	Check every 1,000 hours
5	Air filter	Every 6,000 hours of air filter use	3-603-810-01	Filter	1	
6	Pinch roller	Every 2,000 hours of tape running	X-3167-054-3	Arm assy, pinch	1	Check every 1,000 hours
7	CTL head	Every 4,000 hours of tape running	8-825-554-83	CTL head (PS244-21B)	1	
8	Reel motor	Every 4,000 hours of tape running	A-8267-774-C	RM assy	2	
9	Capstan motor	Every 6,000 hours of tape running	1-698-179-12	Motor, DC (capstan)	1	
10	AT head	Every 6,000 hours of tape running	8-825-779-02	Audio head (PS244-2103J)	1	Check every 3,000 hours
11	Video head cleaner assembly *2	Ealier time either 6,000 hours of drum rotating or 200,000 times of threading	A-8267-308-J	Video head cleaner assembly	1	
12	Pinch solenoid	Ealier time either 6,000 hours of tape running or 200,000 times of threading	1-454-338-00	Solenoid, plunger	1	
13	Fan motor (rear)	Every 40,000 hours of energized	1-698-939-11	Fan, DC (92 square)	1	
14	Fan motor (EQ)	Every 40,000 hours of energized	1-698-786-11	Fan, DC (60 square)	1	
15	Fan motor (MD)	Every 40,000 hours of energized	1-698-857-11	Fan, DC (60 square)	1	
16	Fan motor (PS)	Every 40,000 hours of energized	1-698-812-11	Fan, DC (80 square)	1	

*1 Drum assembly includes an upper drum and a brush slip ring.
*2 Video head cleaner assembly includes a video head cleaer.

Replace the parts shown in the table below periodically when the threading/un-threading operation is repeated frequently.

Replacement parts	Replacement period	Part No.	Name	Q'ty
Brake solenoid	Every 200,000 times of threading	1-454-417-31	Solenoid, Plunger	1
S tension regulator	Every 200,000 times of threading	A-8267-795-D	Tension regulator assy (RP)	1
T tension regulator	Every 200,000 times of threading	A-8267-423-B	T tension regulator assy	1
T drawing arm assembly	Every 200,000 times of threading	A-8278-313-A	Drawer assy (T)	1
Gear box assembly	Every 200,000 times of threading	A-8267-424-A	Box assembly, Gear	1
Threading ring assembly	Every 200,000 times of threading	A-8267-395-E	Ring assembly, Threading	1
Ring roller	Every 200,000 times of threading	3-180-677-01	Roller, Ring	2
		3-180-679-01	Roller (B), Ring	1
Pinch arm guard	Every 200,000 times of threading	3-180-853-01	Guard, Pinch arm	1
CL guide rail	Every 200,000 times of threading	3-180-874-02	Rail, CL guide	1
Cassette compartment assembly	Every 200,000 times of threading	A-8267-589-D	Cassette compartment (RP)	1
Video head cleaner	Every 1,000 hours of drum rotating	X-3167-281-3	Roller assy, V cleaning	1
		3-182-765-02	CR spacer	1
AT head cleaner	Every 1,000 hours of drum rotating	X-3167-053-2	Arm assy, CL	1
Pinch roller	Every 1,000 hours of drum rotating	X-3167-054-3	Arm assy, Pinch	1

5-1-3. Hours Meter

This unit can display an hours meter on the time counter of the lower control panel. Perform a periodic check with this hours meter as a reference.

1. Contents of display

Menu No.	Display	Contents
H01	OPERATION HOURS	Sum of energized time
H02	DRUM RUNNING HOURS	Sum of drum rotating time
H03	TAPE RUNNING HOURS	Sum of tape running time
H04	THREADING COUNTER	Sum of threading
H12	DRUM RUNNING HOURS	Sum of drum rotating time (Resettable)
H13	TAPE RUNNING HOURS	Sum of tape running time (Resettable)
H14	THREADING COUNTER	Sum of threading (Resettable)
H15	AIRFILTER OPERATION HOURS	Sum of air filter use time (Resettable)

2. Display procedures

(1) Press the MENU button on the lower control panel.
(2) Put the "*" to the desired ITEM by turning the JOG dial.
(3) Press the SET button on the lower control panel to display the hours meter.
(4) Press the MENU button once and repeat from step (2) to display other ITEM.
Press the MENU button twice to exit the MENU.

5-2. Cleaning

To make the most of the functions, fully realize the performance of this unit, and to lengthen the life of the unit and tape, clean the components often.

5-2-1. Cleaning by Cleaning Tape

If the video heads are clogged, clean the video head as the following procedure. Make sure to use the specified cleaning tape. If other tape is used, unusual abrasion or damage of the video heads may occur.

Specified cleaning tape: BCT-5CLN

Prodedure

1. Insert the cleaning tape BCT-5CLN to the unit.
2. Press the EJECT and PLAY buttons simultaneously.
   The cleaning tape is played back for approx. 5 seconds. After that, the cleaning tape will be ejected automatically.
   Notes
   - If the cleaning tape is not ejected after playing back more than 5 seconds, be sure to press the EJECT button immediately and eject the cleaning tape.
   - Do not be place the cleaning tape in the STOP mode, and do not put the unit in fast-forward and rewind modes, because the video heads may be damaged.
3. Confirm that the head clogging is clear.

If the video heads are still clogged after cleaning by cleaning tape, clean them by cleaning cloth. (Refer to Section 5-2-3.)

5-2-2. General Information for Cleaning by Cleaning Cloth

1. Cautions

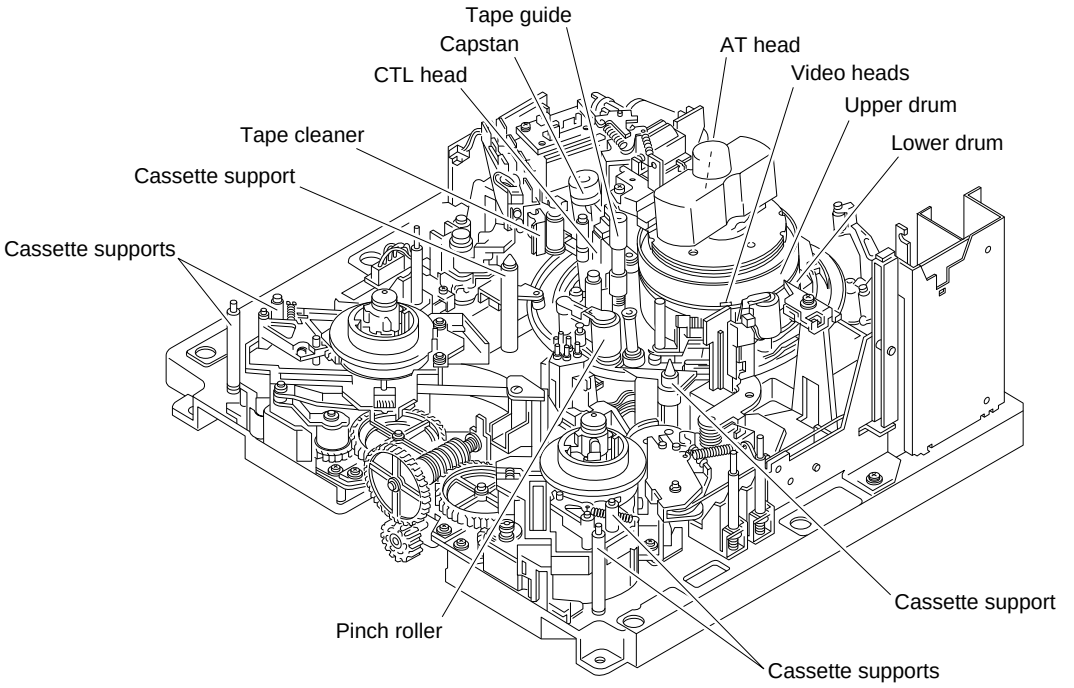
- Be sure turn the power off before cleaning.
- Each block in the mechanical deck consists of a precision part and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not touch the greased portions during cleaning. If grease attaches to cleaning cloth, replace the cleaning cloth with a new one. If a cleaning cloth smeared with grease is used, grease may attach to the places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

2. Preparation

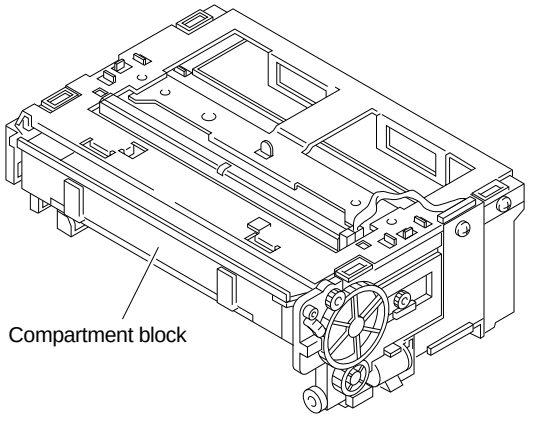
(1) Turn the power off.
(2) Remove the upper lid. (Refer to Section 2-3-1.)
(3) Remove the plate MD assembly. (Refer to Section 2-4.)
(4) Remove the cassette compartment. (Refer to Section 2-5.)

3. Index

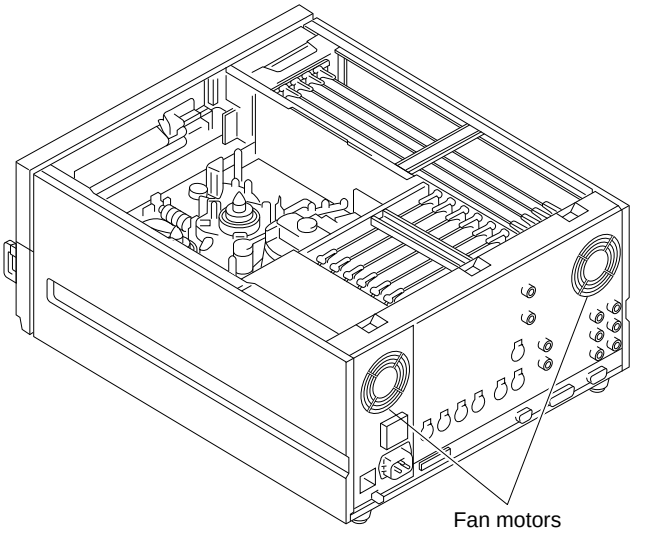
< Mechanical Deck Block >



< Cassette Compartment >



< Chassis >



5-2-3. Tape Running Surface of Upper Drum and Video Heads Cleaning

Caution

Never touch the rotaing drum.
The rotary heads are the part that can be damaged easily. Be careful not to damage the rotary heads during cleaning.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Note

Do not use a cotton swab to clean the video heads.

Procedures

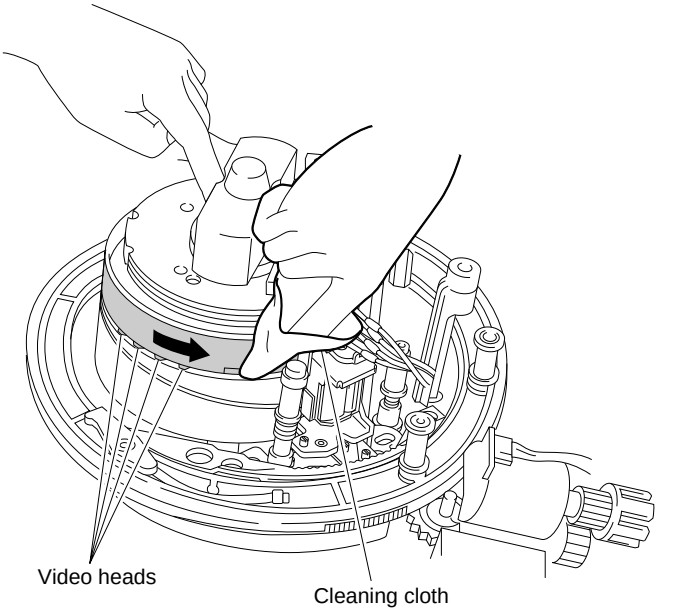
1. Hold the cleaning cloth moistened with a cleaning fluid keeping it without becoming wrinkled. And press the cleaning cloth slightly against the video heads.

2. Rotate the upper drum slowly counterclockwise two or three turns and clean the tape running surface and video heads with the cleaning cloth held.

   Note

   Be sure to rotate the upper drum counterclockwise and clean the video heads along the circumference. Do not rotate the upper drum in the opposite direction (clockwise) or clean it in the vertical direction. This may damage the rotary heads and the brush slip ring assembly.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Video Heads Cleaning

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5-2-4. Tape Running Surface of Lower Drum and Lead Surface Cleaning

Caution

Be careful not to damage the lower drum (specially lead surface) during cleaning. Pay careful attention when cleaning the edge portion above the lower drum because it is located near the video heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Skewer or an equivalent (Never use a metallic skewer.)

Procedures

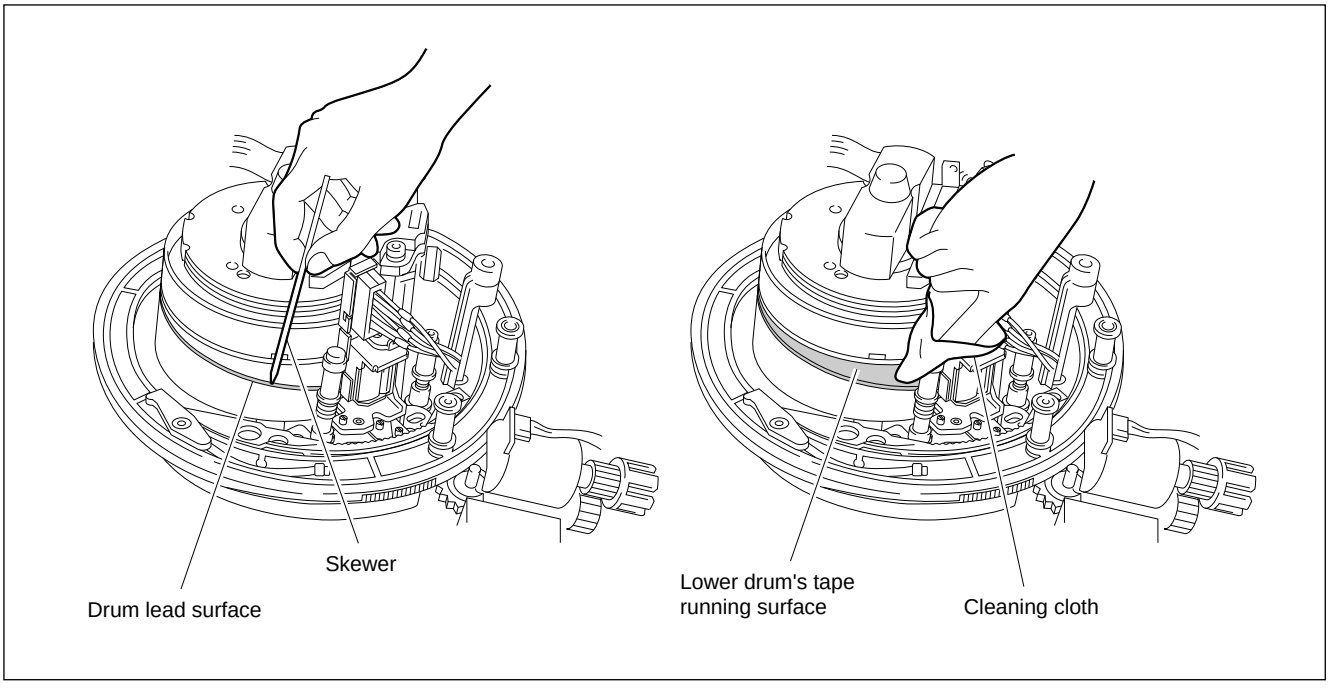
1. As shown in the figure, put a skewer (or an equivalent) along the drum lead surface and remove the magnetic powder.

   Notes

   1. Never use a metallic skewer instead of the skewer. This may damage the tape running surface.
   2. Tracking may be badly influenced when magnetic powder attaches to the drum lead surface. Remove the magnetic powder completely during cleaning.

2. Clean the drum lead surface and lower drum's tape running surface (shaded portion in the figure) with a cleaning cloth moistened with a cleaning fluid.

3. After cleaning, wipe it with a dry cleaning cloth two or three times.



Tape Running Surface of Lower Drum and Lead Surface Cleaning

5-2-5. Stationary Heads Cleaning

Caution

Be careful not to damage the head surface when cleaning the stationary heads.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

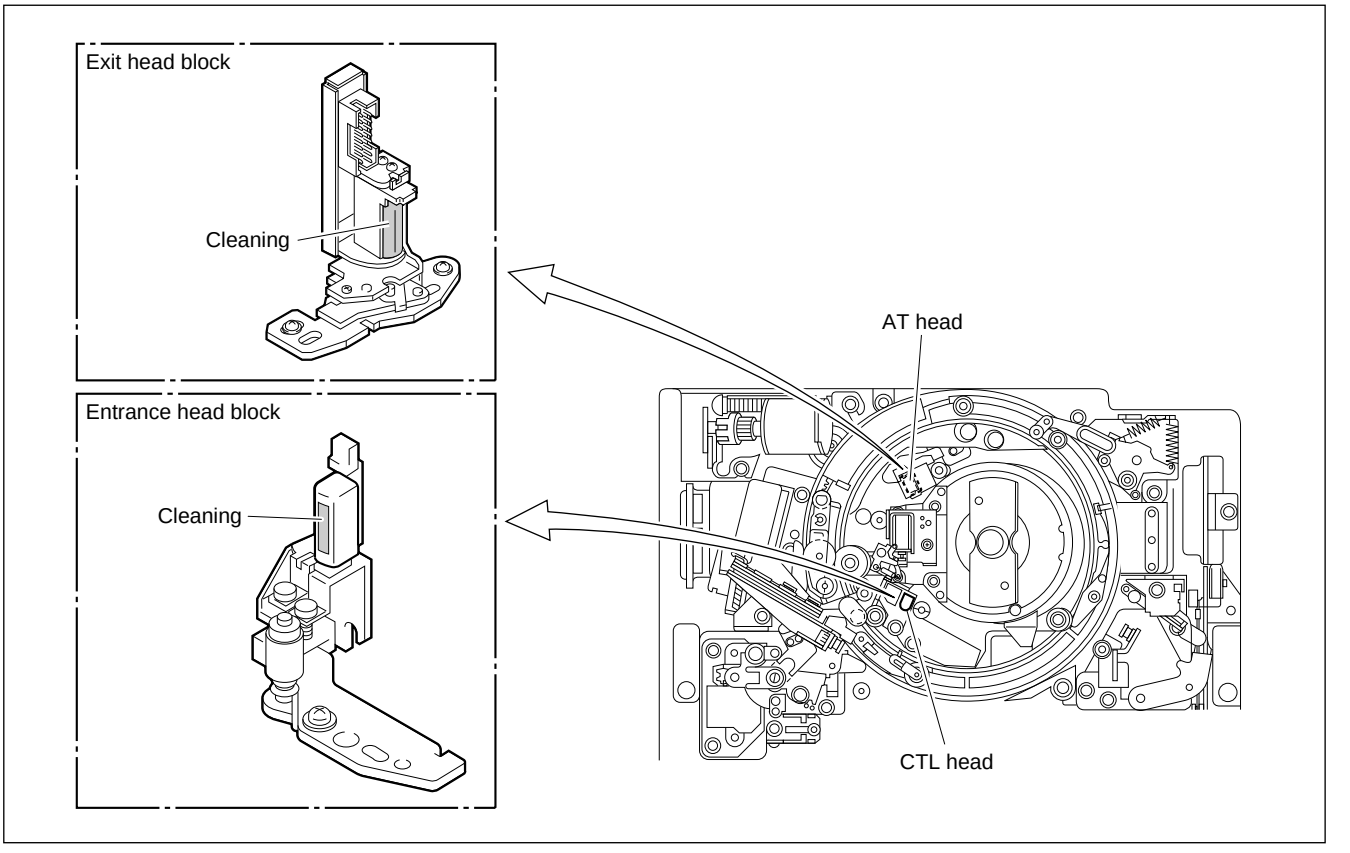
Procedures

1. Clean the tape running surfaces of the AT head and CTL head in the vertical direction with a cleaning cloth moistened with a cleaning fluid.

   Note

   An error may occur in the playback when magnetic powder attaches to the head gap portion of the AT head and CTL head.
   Remove the magnetic powder completely during cleaning.

2. After cleaning, wipe it with a dry cleaning cloth two or three times.



Stationary Heads Cleaning

5-2-6. Tape Running System and Tape Cleaner Cleaning

Warning

The tape cleaner has a sharp edge. Do not touch the edge with bare hands. Pay careful attention when cleaning the tape cleaner.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01

Procedures

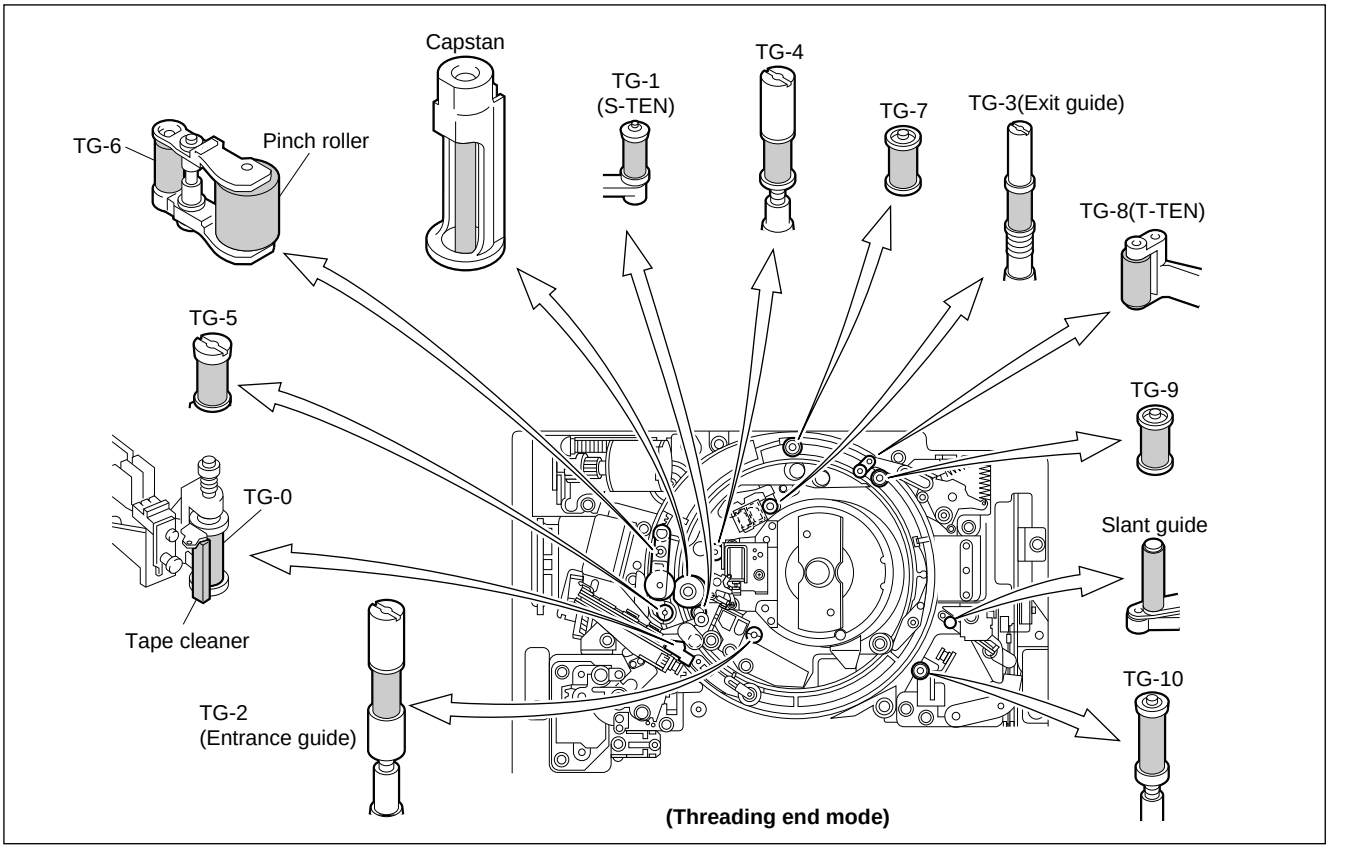
1. Wipe the surface of the tape cleaner using a paper (such as a sheet of paper of this manual) to chip the magnetic powder adhered on the tape cleaner.

   WARNING

   Do not touch the edge portion of the tape cleaner with bare hands.
   Pay careful not to damage the tape cleaner.

2. Clean the tape running surfaces (shaded portions in the figure) of each guide and the tape cleaner with cleaning cloth moistened with a cleaning fluid.

3. After cleaning, clean them with a dry cleaning cloth two or three times.



Tape Running System and Tape Cleaner Cleaning

5-2-7. Fan Motors Cleaning

Notice

The temperature in the unit increases when dust attaches to the fan motor and when the air flow is disturbed. This may badly influence the performance and life of the unit. Clean the fan motor on the rear panel periodically because it accumulates dust easily.

Tools

- Cleaning cloth: 3-184-527-01
- Cleaning fluid: 9-919-573-01
- Vacuum cleaner

Procedures

1. Remove the power panel. (Refer to Section 2-3-4.)
   Disconnection of harness is not necessary.

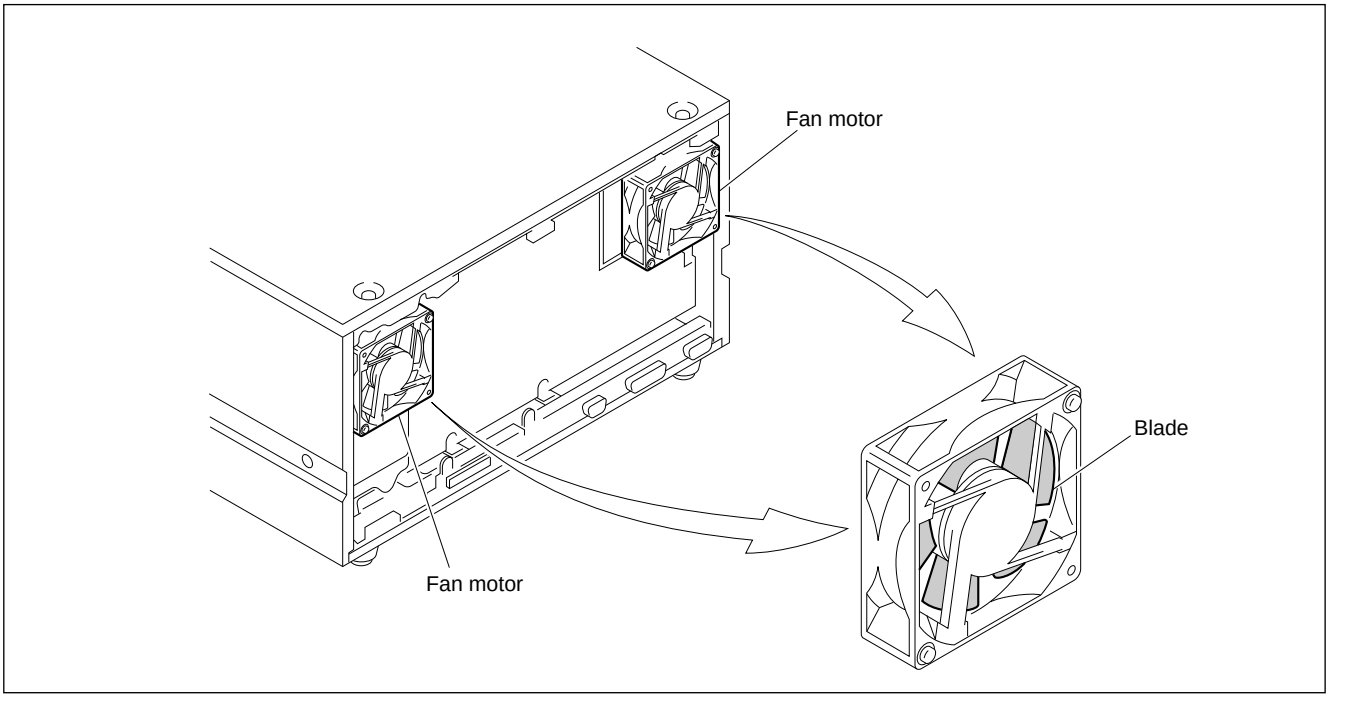
2. Remove the connector panel. (Refer to Section 2-3-3.)
   Disconnection of harness is not necessary.

3. Remove the dust on the fan motors using a vacuum cleaner.

4. Clean the blades (shaded portion in the figure) with cleaning cloth moistened with a cleaning fluid.

5. Install the connector panel. (Refer to Section 2-3-3.)

6. Install the power panel. (Refer to Section 2-3-4.)



Fan Motor Cleaning

5-2-8. Cassette Compartment and Cassette Supports Cleaning

Notes

- Be careful not to apply an excessive force to the compartment or mirror when cleaning the cassette compartment.
- Do not clean the door and mirror with alcohol. This may cause a crack.

Tools

- Cloth (or Gauze)
- Vacuum cleaner

Procedures

1. Remove the cassette compartment from the unit. (Refer to Section 2-5.)

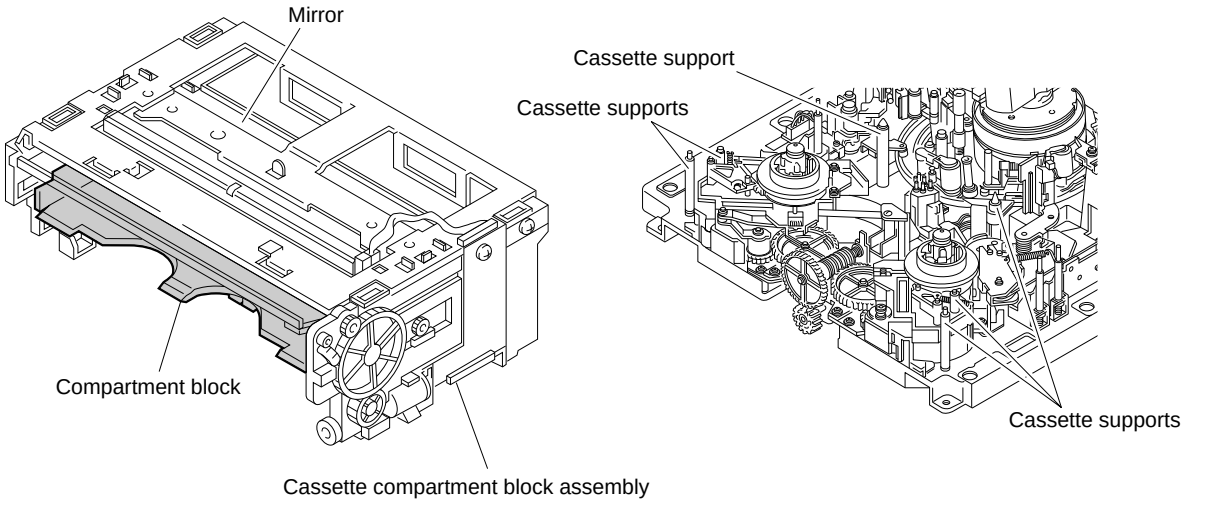
2. Remove the dust on the cassette compartment from the cassette insertion inlet using a vacuum cleaner.

3. Clean the compartment (shaded portion in the figure) with a dry cloth (or gauze).

   Note

   Do not apply an excessive force to the compartment block.

4. Clean the cassette supports on the mechanical deck with dry cloth (or gauze).



Cassette Compartment Cleaning

Section 7
Spare Parts

7-1. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

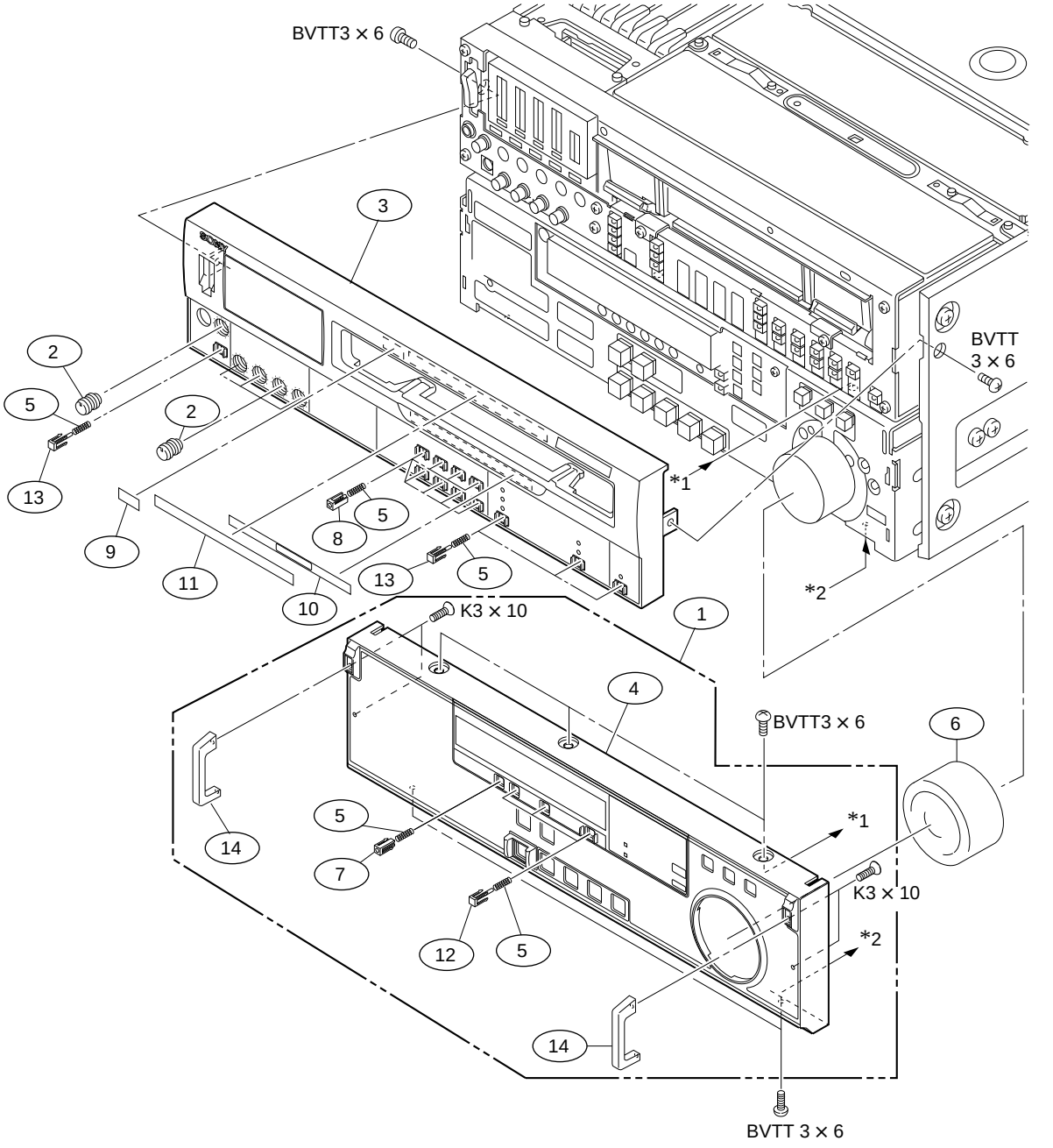
2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

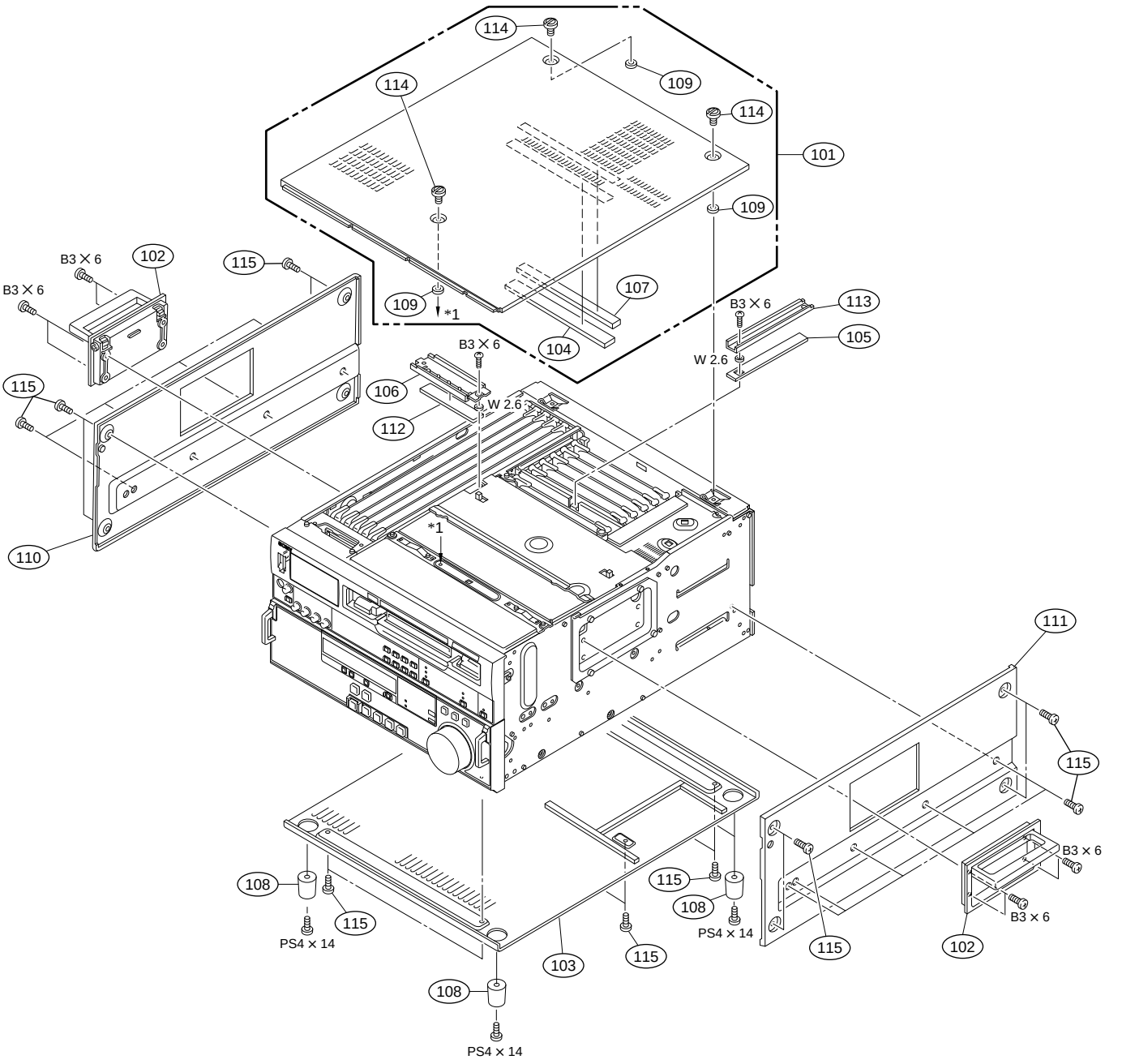
3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may be not stocked. Therefore, the delivery date will be delayed.

7-2. Exploded Views



No.	Part No.	SP	Description
1	A-8278-490-A	o	PANEL ASSY, KEY
2	X-3167-825-1	o	KNOB ASSY(WHITE), VOL
3	X-3678-978-1	o	PANEL SUB ASSY, FRONT
4	X-3678-979-1	o	PANEL SUB ASSY, KEY
5	2-217-533-00	s	SPRING, COMPRESSION
6	3-180-633-03	s	RUBBER, DIAL KNOB
7	3-180-822-03	s	KEY TOP, 6X6(LED,BLACK)
8	3-180-822-11	s	KEY TOP, 6X6(LED,GRAY)
9	3-184-994-01	o	ISR STICKER (S)
10	3-604-813-01	o	A/D LABEL(for DNW-A30/A30P only)
11	3-606-254-01	o	LABEL, MODEL NUMBER(DNW-A30)
	3-606-255-01	o	LABEL, MODEL NUMBER(DNW-A30P)
	3-606-256-01	o	LABEL, MODEL NUMBER(DNW-30)
	3-606-257-01	o	LABEL, MODEL NUMBER(DNW-30P)
12	3-696-774-01	s	KEY TOP, 6X6(BLACK)
13	3-696-774-11	s	KEY TOP, 6X6(GRAY)
14	3-717-425-31	o	HANDLE
	7-685-247-19	s	SCREW +K 3X6 TAPPING TYPE2
	7-685-247-29	s	SCREW +BVTT 3X6(S)

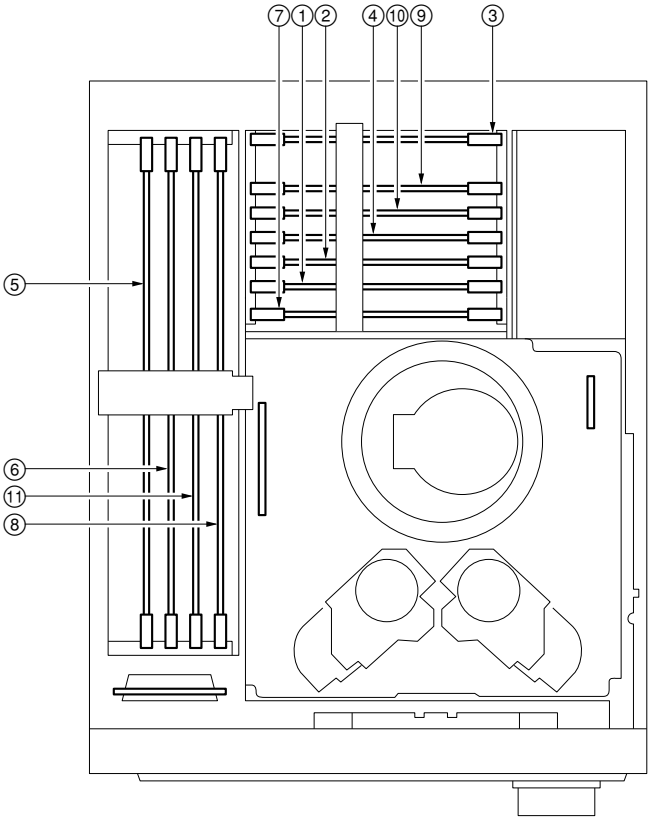


No	Part No.	SP	Description
101	A-8278-584-A	o	LID ASSY, UPPER
102	X-3642-018-3	o	HANDLE ASSY
103	X-3678-563-3	o	PLATE ASSY, BOTTOM
104	3-171-369-02	o	LID(A), UPPER, AIR GUARD
105	3-171-410-01	o	RETAINER(S), PC BOARD(CUSHION)
106	3-180-641-01	o	PLATE(L), PC BOARD RETAINER
107	3-604-811-01	o	LID(B), UPPER, AIR GUARD
108	3-604-930-01	s	FOOT, RUBBER
109	3-688-102-01	o	SPACER, M4
110	3-696-847-02	o	CABINET (LEFT)

No	Part No.	SP	Description
111	3-696-854-01	o	RIGHT CABINET
112	3-696-882-01	o	CUSHION(L), PC BOARD RETAINER
113	3-696-887-01	o	RETAINER (S), PC BOARD
114	3-717-392-01	o	SCREW, LID
115	3-733-690-01	s	SCREW, +B 4X6
	7-623-923-01	s	WASHER 2.6, NYLON
	7-682-547-09	s	SCREW +B 3X6
	7-682-664-01	s	SCREW +PS 4X14

7-3. Plug-in Boards

No.	Board name	Part No.	SP	Description
1	APR-12	A-8312-745-A	o	MOUNTED CIRCUIT BOARD, APR-12D (for DNW-A30)
		A-8312-781-A	o	MOUNTED CIRCUIT BOARD, APR-12DP (for DNW-30P)
		A-8312-790-A	o	MOUNTED CIRCUIT BOARD, APR-12E (for DNW-30)
		A-8312-799-A	o	MOUNTED CIRCUIT BOARD, APR-12EP (for DNW-30P)
2	APR-13	A-8312-741-A	o	MOUNTED CIRCUIT BOARD, APR-13D
3	DIF-42	A-8312-739-A	o	MOUNTED CIRCUIT BOARD, DIF-42D
4	DM-89	A-8275-154-B	o	MOUNTED CIRCUIT BOARD, DM-89 (for DNW-A30 only)
		A-8275-088-B	o	MOUNTED CIRCUIT BOARD, DM-89P (for DNW-A30P only)
5	DPR-71	A-8312-743-A	o	MOUNTED CIRCUIT BOARD, DPR-71D
6	DPR-73	A-8273-623-A	o	MOUNTED CIRCUIT BOARD, DPR-73
7	EQ-56	A-8312-733-A	o	MOUNTED CIRCUIT BOARD, EQ-56D (for DNW-A30/A30P)
		A-8312-788-A	o	MOUNTED CIRCUIT BOARD, EQ-56E (for DNW-30/30P)
8	SS-63	A-8273-560-A	o	MOUNTED CIRCUIT BOARD, SS-63
9	TBC-23	A-8275-155-B	o	MOUNTED CIRCUIT BOARD, TBC-23 (for DNW-A30 only)
		A-8275-271-B	o	MOUNTED CIRCUIT BOARD, TBC-23PG (for DNW-A30P only)
10	TBC-24	A-8275-156-A	o	MOUNTED CIRCUIT BOARD, TBC-24 (for DNW-A30 only)
		A-8275-087-A	o	MOUNTED CIRCUIT BOARD, TBC-24P (for DNW-A30P only)
11	VPR-17	A-8273-571-A	o	MOUNTED CIRCUIT BOARD, VPR-17D (for DNW-A30/30)
		A-8312-779-A	o	MOUNTED CIRCUIT BOARD, VPR-17DP (for DNW-A30P/30P)



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7-4. Packing Materials and Supplied Accessories

Ref. No. or Q'ty	Part No.	SP	Description
1pc	3-181-533-02	o	CUSHION (LOWER)
1pc	3-181-534-02	o	CUSHION (UPPER)
1pc	3-181-535-01	o	SPACER (A)
1pc	3-181-536-01	o	SPACER (B)
1pc	3-606-241-01	o	INDIVIDUAL CARTON (for DNW-A30)
	3-606-242-01	o	INDIVIDUAL CARTON (for DNW-A30P)
	3-606-243-01	o	INDIVIDUAL CARTON (for DNW-30)
	3-606-244-01	o	INDIVIDUAL CARTON (for DNW-30P)
4pcs	7-682-965-01	s	SCREW +PSW 4X16

7-5. Fixtures List

Part No.	SP	Description
J-6035-070-A	o	EXTRACTION TOOL (for PLCC socket)
J-6080-029-A	o	SMALL DENTAL MIRROR (Round type ø12)
J-6086-570-A	o	REFERENCE FLAT PLATE
J-6152-450-A	o	WIRE CLEARANCE CHECK GAUGE SET
J-6251-090-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=2.5 mm, l=120 mm)
J-6323-440-A	o	TORQUE SCREWDRIVER'S HEXAGONAL BIT (d=0.89 mm, l=50 mm)
J-6323-420-A	o	TORQUE SCREWDRIVER'S BIT (+2 mm, l=75 mm)
J-6323-430-A	o	TORQUE SCREWDRIVER'S BIT (+3 mm, l=50 mm)
J-6252-510-A	o	TORQUE SCREWDRIVER (6 kg•cm) (0.6 N•m)
J-6252-520-A	o	TORQUE SCREWDRIVER (12 kg•cm) (1.2 N•m)
J-6269-810-A	o	EXTENSION BOARD (S), EX-377 (for DNW-A30/A30P)
A-8277-211-A	o	EXTENSION BOARD (L), EX-555
A-8277-212-A	o	EXTENSION BOARD (S), EX-556
J-6320-870-A	o	REEL MOTOR SHAFT SLANTNESS CHECK FIXTURE
J-6320-880-A	o	CASSETTE REFERENCE PLATE (L)
J-6322-610-A	o	TAPE GUIDE ADJUSTMENT DRIVER
J-6329-350-A	o	REEL TABLE HEIGHT GAUGE
1-952-684-11	o	EXTENSION CABLE (14P) (for DNW-A30/A30P)
1-957-071-11	o	EXTENSION CABLE SET
3-184-527-01	o	CLEANING CLOTH (15 cmX15 cm)
7-432-114-11	o	LOCKING COMPOUND, 1401B (200 g)
7-661-018-18	o	DIAMOND OIL, NT-68 (50 ml)
7-651-000-10	o	SONY GREASE, SGL-601 (50 g)
7-700-736-01	o	L-SHAPED HEXAGONAL WRENCH (d=1.27 mm)
7-700-736-05	o	L-SHAPED HEXAGONAL WRENCH (d=1.5 mm)
7-700-736-06	o	L-SHAPED HEXAGONAL WRENCH (d=0.89 mm)
7-700-766-04	o	HEXAGONAL WRENCH DRIVER (d=2.5 mm)
8-960-075-01	o	ALIGNMENT TAPE, SR5-1 (for 525/60 system)
8-960-075-11	o	ALIGNMENT TAPE, SR2-1 (for 525/60 system)
8-960-075-51	o	ALIGNMENT TAPE, SR5-1P (for 625/50 system)
8-960-075-61	o	ALIGNMENT TAPE, SR2-1P (for 625/50 system)
8-960-096-01	o	ALIGNMENT TAPE, CR2-1B (for DNW-A30)
8-960-096-41	o	ALIGNMENT TAPE, CR5-1B (METAL PARTICLE TAPE) (for DNW-A30 only)
8-960-096-51	o	ALIGNMENT TAPE, CR2-1B PS (for DNW-A30P only)
8-960-097-44	o	ALIGNMENT TAPE, CR5-2A (OXIDE TAPE) (for DNW-A30 only)
8-960-097-45	o	ALIGNMENT TAPE, CR8-1A (OXIDE TAPE) (for DNW-A30 only)
8-960-096-91	o	ALIGNMENT TAPE, CR5-1B PS (METAL PARTICLE TAPE) (for DNW-A30P only)
8-960-096-86	o	ALIGNMENT TAPE, CR8-1B PS (METAL PARTICLE TAPE) (for DNW-A30P only)
8-960-098-44	o	ALIGNMENT TAPE, CR5-2A PS (OXIDE TAPE) (for DNW-A30P only)
8-960-098-45	o	ALIGNMENT TAPE, CR8-1A PS (OXIDE TAPE) (for DNW-A30P only)
9-911-053-00	o	THICKNESS GAUGE
9-919-573-01	o	CLEANING LIQUID
J-6332-240-A	o	VISC PHASE ADJUSTING TOOL (for DNW-A30P/30p only)

Appendix A
Setting Check Sheet

It is reccomended to copy these check sheets and write down the setup conditions (switch and so on) under the application.
If the setting is changed temporarily by changing operating condition, the setting can be reset easily.
It is recommended to attach the sheets to the unit when check, maintenance and repair.
If the unit is used frequently by changing the combination of each system, making the sheets are convenient.
(Make use of the check sheets in prevention of setting error.)

Model name: DNW-_____ Serial No.: _____

- Software

  SYS1 ROM version: _____
  SYS2 ROM version: _____
  SV1 ROM version: _____

- RS-232 baud rate: _____ bps Flow control: ☐ H/W
  ☐ XOFF(XON/XOFF)

- Hours meter

  Write down the value of hours meter when checking, servicing and maintaining.

ITEM	Date	Hours meter
H01: OPERATION HOURS	/	
H02: DRUM RUNNING HOURS	/	
H03: TAPE RUNNING HOURS	/	
H04: THREADING COUNTER	/	
H12: DRUM RUNNING HOURS(Resettable)	/	
H13: TAPE RUNNING HOURS(Resettable)	/	
H14: THREADING COUNTER(Resettable)	/	
H15: AIRFILTER OPERATION HOURS(Resettable)	/	

Connector panel

Switch	Factory setting	Setting			
Reference video input 75 Ω	ON	☐ ON	☐ OFF		

Upper control panel

Switch		Factory setting	Setting			
AUDIO MONITOR	L	CH-1	☐ CH-1	☐ CH-2	☐ CH-3	☐ CH-4
	R	CH-2	☐ CH-1	☐ CH-2	☐ CH-3	☐ CH-4
TC		AUTO	☐ LTC	☐ AUTO	☐ VITC	
DF/NDF		DF	☐ DF	☐ NDF		
VITC		ON	☐ ON	☐ OFF		
REMOTE/LOCAL		LOCAL	☐ 9P (REMOTE)	☐ (LOCAL)		

Sub control panel

Switch	Factory setting	Setting		
EMPHASIS (DNW-A30/A30P only)	OFF	☐ ON	☐ OFF	
CHARACTER	ON	☐ OFF	☐ ON	
DOLBY NR (DNW-A30/A30P only)	ON	☐ OFF	☐ ON	
PROCESS CONTROL	LOCAL	☐ REMOTE	☐ MENU	☐ LOCAL
VIDEO	PRESET	☐ PRESET	☐ MANUAL	
CHROMA	PRESET	☐ PRESET	☐ MANUAL	
SET UP (DNW-A30/30 only)	PRESET	☐ PRESET	☐ MANUAL	
BLACK LEVEL (DNW-A30P/30P only)	PRESET	☐ PRESET	☐ MANUAL	
Y/C DELAY	PRESET	☐ PRESET	☐ MANUAL	
CHROMA PHASE	PRESET	☐ PRESET	☐ MANUAL	
KEY INHIBIT	OFF	☐ ON	☐ OFF	
CAPSTAN LOCK	4FD	☐ 2FD	☐ 4FD	☐ 8FD (625/50)

Short plugs on the board

Note Never change the setting of Factory use switches.

Board	Name		Ref.No./channel	Factory setting	Setting
APR-12	Audio input headroom		COR101/CH1	20 dB	
	(DNW-A30/A30P only)		COR201/CH2	20 dB	
	Monitor output level	L	COR302	+4 dBm/600 Ω	
		R	COR402	+4 dBm/600 Ω	
	Monitor output headroom	L	COR300	20 dB	
		R	COR400	20 dB	
	Variable monitor output level	L	COR301	Fixed (UNITY)	
		R	COR401	Fixed (UNITY)	
	HEAD TUNE Switch		S500/CH1	Factory use	–
	(DNW-A30/A30P only)		S600/CH2	Factory use	–
APR-13	Audio output level		COR301/CH1	+4 dBm/600 Ω	
			COR401/CH2	+4 dBm/600 Ω	
			COR501/CH3	+4 dBm/600 Ω	
			COR601/CH4	+4 dBm/600 Ω	
	Audio output headroom		COR300/CH1	20 dB	
			COR400/CH2	20 dB	
			COR500/CH3	20 dB	
			COR600/CH4	20 dB	
SS-63	Factory use		COR100	OPEN	–
	Factory use		COR101	OPEN	–
	Factory use		COR102	OPEN	–
	Factory use		COR103	SHORT*1	–
	Factory use		COR104	SHORT*1	–

*1: COR103 and 104 have no plug, but are shorted by pattern.

Switches on the board

Note Never change the setting of Factory use switches.

Board	Switch No.: Name				Factory setting		Setting
DM-89 (DNW-A30/A30P only)							
	S101		: Y-RF LPF & EQ TEST		NORMAL POSITION		
	S102		: Factory use		NORMAL POSITION		
	S301		: C-RF LPF & EQ TEST		NORMAL POSITION		
	S302		: Factory use		NORMAL POSITION		–
	S501		: Factory use		ON		–
	S901	1	: RF adjusting switch		OFF (OPEN)		
		2	: Factory use		OFF (OPEN)		–
		3	: Factory use		OFF (OPEN)		–
		4	: Factory use		OFF (OPEN)		–
TBC-23 (DNW-A30/A30P only)							
	S1	1	: Y MUTE		OFF (OPEN)		
		2	: C MUTE		OFF (OPEN)		
		3	: Factory use		OFF (OPEN)		–
		4	: Factory use		OFF (OPEN)		–
		5	: COMB		OFF (OPEN)		
		6	: TBC TEST		OFF (OPEN)		
		7	: Factory use		OFF (OPEN)		–
		8	: VIDEO PHASE		OFF (OPEN)		
	S500	1 – 4	: Factory use		OFF (OPEN)		–
SS-63	S101	1*2	: FLASH MEMORY		OFF (OPEN)		–
		2	: ANA AUTO-TRACKING		ON (CLOSE)		
		3	: ANA DISABLE		OFF (OPEN)		
		4*3	: SV ERR DISABLE		OFF (OPEN)		–
	S1100	1	: EXTENDED MENU		OFF (OPEN)		
		2	: MAINTE MODE ACCESS		OFF (OPEN)		
		3 – 8	: Factory use		OFF (OPEN)		–
	S1102	Never change the settings of S1102 switch since each switch is set according to the characteristics of the unit.					
		1 – 6	: Model ID switch			DNW-A30/A30P	DNW-30/30P
				1:	OFF (OPEN)	OFF (OPEN)	–
				2:	OFF (OPEN)	OFF (OPEN)	–
				3:	OFF (OPEN)	OFF (OPEN)	–
				4:	ON (CLOSE)	ON (CLOSE)	–
				5:	OFF (OPEN)	OFF (OPEN)	–
				6:	OFF (OPEN)	ON (CLOSE)	–
		7	: J/SY		ON (CLOSE)		
		8	: 525/625	DNW-A30/30:	OFF (OPEN)		
				DNW-A30P/30P:	ON (CLOSE)		
	S1900	1 – 8	: Factory use		OFF (OPEN)		–

*2, *3: Never change the switches S101-1 and S101-4.

For 525/60 system

Set up menu

Note When Bank 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to check the current menu first, before recall Bank 1 to 4.

- **Main menu**

ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001: PREROLL TIME	5S					
002: CHARACTER H-POSITION	14					
003: CHARACTER V-POSITION	56					
004: SYNCHRONIZE	ON					
005: DISPLAY INFORMATION SELECT	T&STA					
006: LOCAL FUNCTION ENABLE	ST&EJ					
007: TAPE TIMER DISPLAY	+−12H					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013*4: 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

*4: ITEM013 is no relation with Bank.

ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.
B00 series is OFF on the normal state. Set to ON only when ITEM is carried out. After finishing, B00 series retern to OFF autmatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

- **Extended menu**

ITEM-100 series: Operational panel parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE		DIAL					
102: MAXIMUM TAPE SPEED (B-CAM)							
	DNW-A30:	×35					
	DNW-A30P:	×42					
104: AUDIO MUTING TIME		OFF					
105: REFERENCE SYSTEM ALARM		ON					
106: CAPSTAN LOCK		SW					
109: MUTE WHEN TAPE UNTHREAD		ON					
118: KEY INHIBIT SWITCH EFECTIVE AREA							
SUB-ITEM	1:REMOTE SELECT	DIS					
	2: MON SEL	DIS					
	3: CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		OFF					
120: CTL LOCK IN VAR/SHTL		OFF					
123: TAPE INDEX SELECT		ALL					

ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION	DECEL					

ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	REEL					
405: CUE-UP BY CTL	CAP					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STD BY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	–––					
	12: 12 line	BLANK					
	13: 13 line	BLANK					
	14: 14 line	BLANK					
	15: 15 line	BLANK					
	16: 16 line	BLANK					
	17: 17 line	BLANK					
	18: 18 line	BLANK					
	19: 19 line	BLANK					
	20: 20 line	BLANK					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
709: CAV LEVEL FORMAT							
SUB-ITEM	1: OUTPUT CAV LEVEL	B-CAM					
710: INTERNAL SIGNAL GENERATOR		OFF					
712: VIDEO PROCESS ON CAP LOCK 2FIELD		OFF					
713: VIDEO SETUP REFERENCE LEVEL							
SUB-ITEM	0: MASTER LEVEL	7.5%					
	3: BETACAM PB LEVEL (DNW-A30 only)	MSTER					
	4: OUTPUT LEVEL	MSTER					
714: VIDEO ADJUST RANGE		–3~+3					
715: VIDEO GAIN		800					
716: CHROMA GAIN		800					
717: CHROMA PHASE CONTROL		80					
718: SETUP LEVEL		110					
719: SYSTEM PHASE SYNC		80					
720: SYSTEM PHASE SC		0					
721: Y/C DELAY		800					
726: H BLANKING WIDTH		NAROW					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: METER SCALE PEAK	0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					

ITEM-F00 series: Adjustment use only

This series is not necessary to setting.
In the normal operation, use the factory settings.

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE (DNW-A30/A30P only)	ON					
F02: EMERGNECY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	OFF					
F34: STOP PINCH OFF TIME	5MIN					

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625/50 system

Set up menu

Note When Bank 1 to 4 menu is recalled, the current menu will be overwritten.
Be sure to check the current menu first, before recall Bank 1 to 4.

• Main menu

ITEM-000 series: Operational parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
001: PREROLL TIME	5S					
002: CHARACTER H-POSITION	12					
003: CHARACTER V-POSITION	6A					
004: SYNCHRONIZE	ON					
005: DISPLAY INFORMATION SELECT	T&STA					
006: LOCAL FUNCTION ENABLE	ST&EJ					
007: TAPE TIMER DISPLAY	+−12H					
009: CHARACTER TYPE	WHITE					
011: CHARACTER V-SIZE	×1					
013*4: 525/625 SYSTEM SELECT	OFF	–	–	–	–	–

*4: ITEM013 is no relation with Bank.

ITEM-B00 series: Menu bank parameter

This series is not necessary to write down the setting.
B00 series is OFF on the normal state. Set to ON only when ITEM is carried out. After finishing, B00 series retern to OFF autmatically.

ITEM	Factory setting
B01: RECALL BANK 1	OFF
B02: RECALL BANK 2	OFF
B03: RECALL BANK 3	OFF
B04: RECALL BANK 4	OFF
B11: SAVE BANK 1	OFF
B12: SAVE BANK 2	OFF
B13: SAVE BANK 3	OFF
B14: SAVE BANK 4	OFF
B20: RESET SETUP	OFF

- **Extended menu**

ITEM-100 series: Operational panel parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
101: SELECTION FOR SEARCH DIAL ENABLE		DIAL					
102: MAXIMUM TAPE SPEED (B-CAM)							
	DNW-A30:	×35					
	DNW-A30P:	×42					
104: AUDIO MUTING TIME		OFF					
105: REFERENCE SYSTEM ALARM		ON					
106: CAPSTAN LOCK		SW					
109: MUTE WHEN TAPE UNTHREAD		ON					
118: KEY INHIBIT SWITCH EFECTIVE AREA							
SUB-ITEM	1:REMOTE SELECT	DIS					
	2: MON SEL	DIS					
	3: CONTROL PANEL	DIS					
119: VARIABLE SPEED LIMIT IN KEY PANEL CONTROL		OFF					
120: CTL LOCK IN VAR/SHTL		OFF					
123: TAPE INDEX SELECT		ALL					

ITEM-200 series: Remote interface parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
201: PARA RUN	DIS					

ITEM-300 series: Editing parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
301: VAR SPEED RANGE FOR SYNCHRONIZATION	~1.5					
302: CAPSTAN RE-LOCKING DIRECTION	ACCEL					

ITEM-400 series: Preroll parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
401: FUNCTION MODE AFTER CUE-UP	STOP					
403: AUTOMATIC PREROLL REFERENCE ENTRY	DIS					
404: CUE-UP BY TC	REEL					
405: CUE-UP BY CTL	CAP					

ITEM-500 series: Tape protection parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
501: STILL TIMER	8M					
502: TAPE PROTECTION MODE FROM SEARCH	STEP					
503: TAPE PROTECTION MODE FROM STOP	STD BY					
504: DRUM ROTATION IN STANDBY OFF	OFF					
505: STILL TENSION	NORM					

ITEM-700 series: Video control parameter

ITEM		Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
703: BLANK LINE SELECT							
SUB-ITEM	0: All line	–––					
	9: 9,322 line	BLANK					
	10: 10,323 line	BLANK					
	11: 11,324 line	BLANK					
	12: 12,325 line	BLANK					
	13: 13,326 line	BLANK					
	14: 14,327 line	BLANK					
	15: 15,328 line	BLANK					
	16: 16,329 line	BLANK					
	17: 17,330 line	BLANK					
	18: 18,331 line	BLANK					
	19: 19,332 line	BLANK					
	20: 20,333 line	BLANK					
	21: 21,334 line	BLANK					
	22: 22,335 line	BLANK					
	23: 23 line	HALF					
705: EDGE SUBCARRIER REDUCER MODE		AUTO					
706: VERTICAL BLANKING V SHIFT		ON					
707: FORCED VERTICAL INTERPOLATION OFF		AUTO					
710: INTERNAL SIGNAL GENERATOR		OFF					
712: VIDEO PROCESS ON CAP LOCK 2FIELD		OFF					
714: VIDEO ADJUST RANGE		–3~+3					
715: VIDEO GAIN		800					
716: CHROMA GAIN		800					
717: CHROMA PHASE CONTROL		80					
718: BLACK LEVEL		110					
719: SYSTEM PHASE SYNC		80					
720: SYSTEM PHASE SC		0					
721: Y/C DELAY		800					
726: H BLANKING WIDTH		NAROW					

ITEM-800 series: Audio control parameter

ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
802: DIGITAL AUDIO MUTE IN SHUTTLE MODE	OFF					
805: AUDIO MONITOR OUTPUT MIXING	RMS					
806: METER SCALE PEAK	0					
807: AUDIO OUTPUT PHASE	80					
808: INTERNAL AUDIO SIGNAL GENERATOR	OFF					
809: AUDIO LEVEL METER DIMMER CONTROL	0					

ITEM-F00 series: Adjustment use only

This series is not necessary to setting.
In the normal operation, use the factory settings.

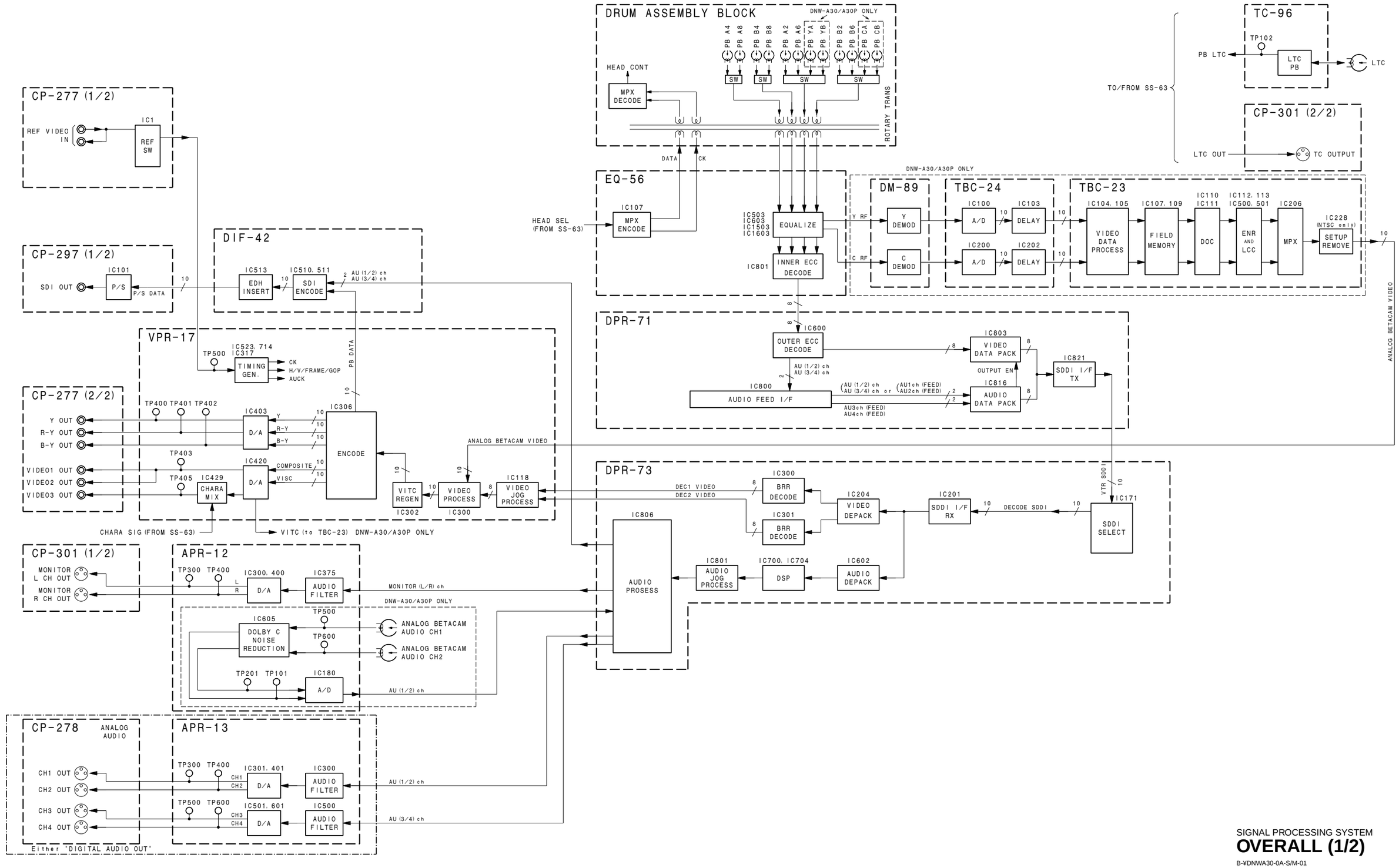
ITEM	Factory setting	Current	Bank 1	Bank 2	Bank 3	Bank 4
F01: AUDIO NR IN SP MODE (DNW-A30/A30P only)	ON					
F02: EMERGNECY TAPE PROTECTION	ENA					
F13: TRACKING CONTROL VIA SEARCH DIAL	OFF					
F16: DEVICE TYPE MODIFY	0					
F21: PROCESS CONT VR	OFF					
F34: STOP PINCH OFF TIME	5MIN					

Appendix B
Block Diagrams

INDEX **Page**

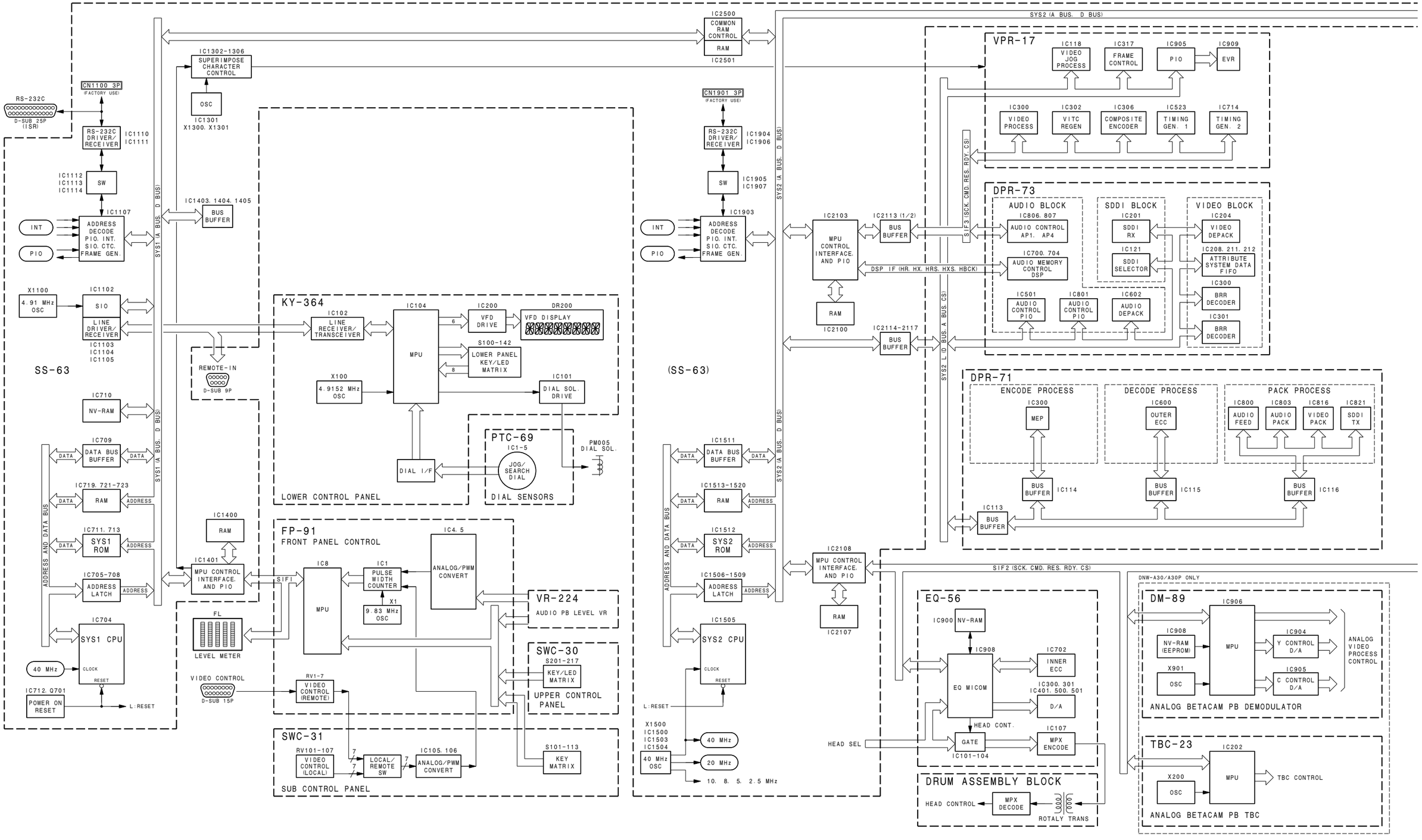
OVERALL (1/2) Signal Processing system B-3
OVERALL (2/2) Servo/System Control system B-5

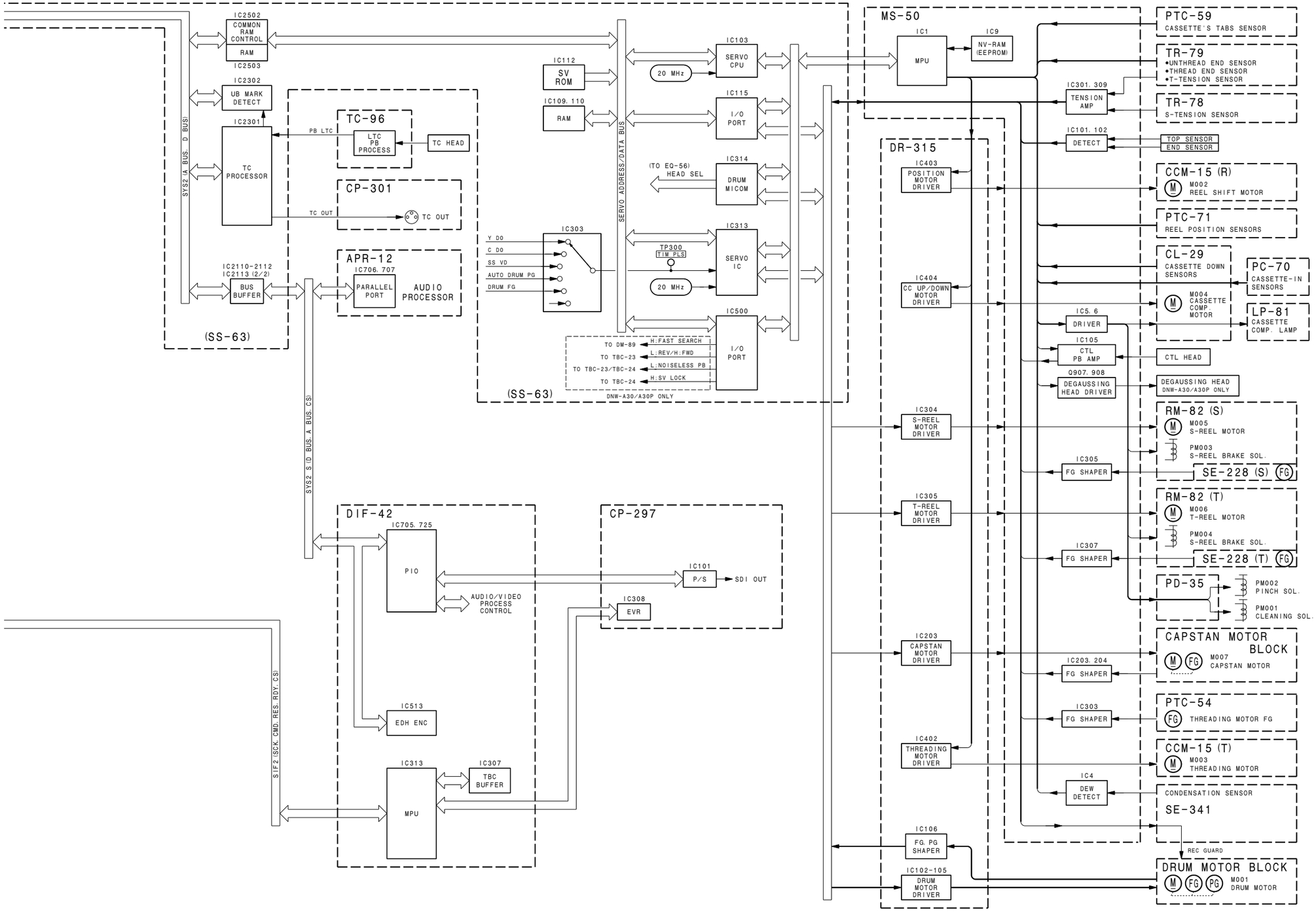
DNW-A30/A30P/30/30P (SY) : S/N 10001 and Higher



SIGNAL PROCESSING SYSTEM
OVERALL (1/2)
B-¥DNWA30-0A-S/M-01

DNW-A30/A30P/30/30P (SY) : S/N 10001 and Higher





SERVO/SYSTEM CONTROL SYSTEM
OVERALL (2/2)
B-¥DNWA30-0A-S/M-01

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For the U.S.A. and Canada

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

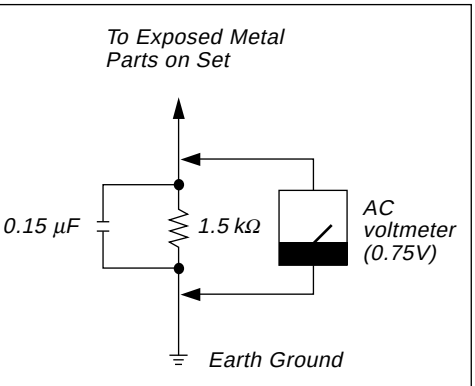

Fig A. Using an AC voltmeter to check AC leakage.

DNW-A30 (SY)
DNW-A30P (SY)
DNW-30 (SY)
DNW-30P (SY) E
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